Intel® Server D50TNP Family

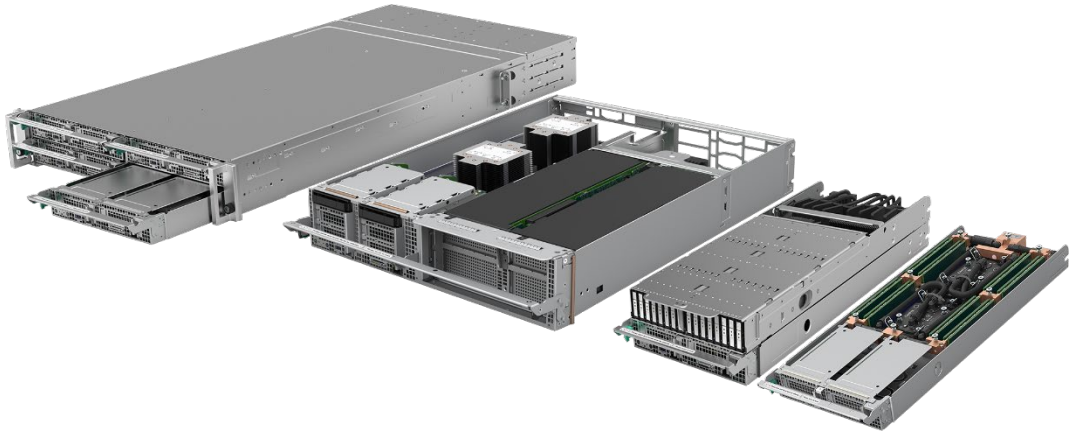
Intel® Server Board D50TNP
Intel® D50TNP Modules
Intel® Server System D50TNP

Configuration Guide

A reference document to identify available Intel® server building blocks, integrated systems, accessories, and spare parts associated with the Intel® Server D50TNP Family.

Rev. 1.6

November 2022



D50TNP

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Document Revision History

Date	Revision	Changes
May 2021	1.0	Initial production release

July 2021	1.1	• Table 3, Doc Reference table
		  ○ Added two DCM documents at end of table
		  ○ Added 3rd Generation Intel® Xeon® Scalable processor TMSDG
		• Table 4, "Intel® Server Board D50TNP Family Features". Updated table.
		  ○ Updated Maximum Processor Thermal Design Power (TDP). Added note
		  ○ USB Support. Added Important Note.
		  ○ Chipset. Added information
		  ○ Server Management Processor. Added row.
		• Tables 6, 7, 13, 14. Updated package gross weight and un-package net weight.
		• Table 19, "Miscellaneous Accessory Options". Added Advanced System Management Key

August 2021	1.2	• Updates on EVAC release/availability. • Updated BIOS and BMC documents titles.
January 2022	1.3	• Table 14, "Compute Module D50TNP2MFALAC Product Specifications". Added note on accelerator card kit • Table 20, "Miscellaneous Accessory Options". Added more images to various D50TNP Accelerator Card kits
March 2022	1.4	• Chapter 1, "Overview" Re-organized • Section 1.1, "Product Family Overview." Added section. • Section 1.5, "Intel® Server D50TNP Modules Overview." Added note. • Section 1.6, "Intel® Server System D50TNP / Chassis Overview." Added Table 5. • Updated the following tables: Table 7, Table 8, Table 9, Table 10, Table 11, Table 12, Table 13, Table 14, Table 15, Table 16, Table 17, Table 18, Table 19 • Minor edits throughout for clarity
September 2022	1.5	• Table 20, "Miscellaneous Accessory Options." Updated images and added notes on A100 accelerator card kit.
November 2022	1.6	• Table 20, "Miscellaneous Accessory Options." Updated images and added new TPM AXXTPMENC9.

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1. Overview

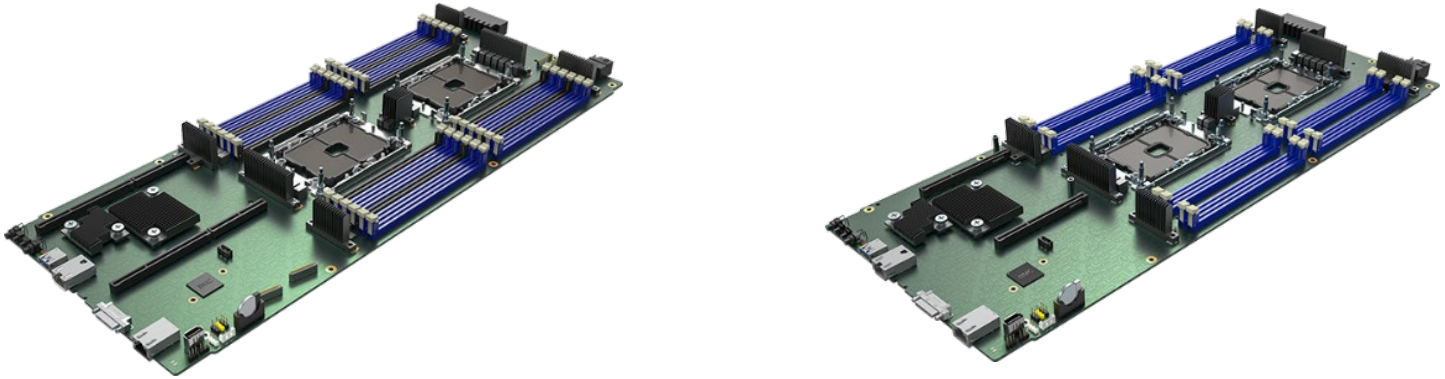
This document provides a catalog of available Intel® boards, modules, chassis, accessories, and spares for the Intel® Server D50TNP Family.

1.1 Product Family Overview

The Intel Server D50TNP Family offers options to support liquid-cooled and air-cooled configurations. All systems within the family are fully configured with 1U or 2U modules.

The core products that define the high-performance, density-optimized Intel Server D50TNP Family include:

- **Intel® Server Board D50TNP**– Two options of server board only product that offer the server system developers the choice of integrating the server board within their own modules and server chassis. The server board can also be used as a spare Field Replaceable Unit (FRU).
- **Intel® D50TNP Modules** – Options of density optimized 1U and 2U modules (server building block option and spare FRU) integrated with either Intel® Server Board D50TNP1SB or D50TNP1SBCR (module dependent).
- **Intel® Server Systems D50TNP** – Options of 2U rack-mount server systems configured with Intel® D50TNP Modules and integrated with Intel® Server Chassis FC2000.



Intel® Server Board D50TNP1SB

Intel® Server Board D50TNP1SBCR

Figure 1. Intel® Server Board D50TNP

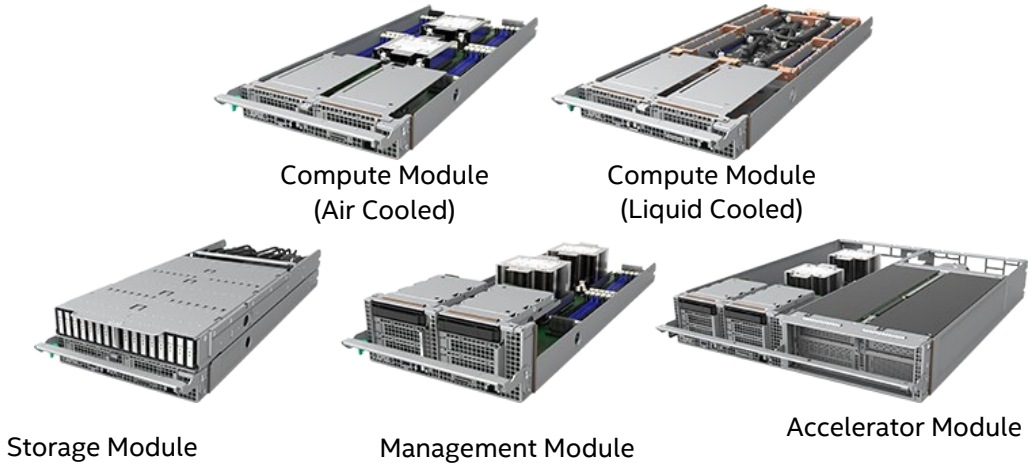


Figure 2. Intel® D50TNP Modules

Figure 3. Intel® Server Systems D50TNP

The following options are available for ordering the board, modules, and systems.

L3 = Server board product.
L6 = Modules Building Block Option with an integrated Intel® Server Board D50TNP1SB or D50TNP1SBCR. The base configuration is non-functional out of the box. Additional integration of Chassis and components required.
L9 = Fully integrated system. Pre-configured. Base configuration is power-on ready. No operating system installed.

Important Note: Fully configured (operation ready, no operating system) L9 systems are only orderable from Intel using its online Configure-To-Order (CTO) tool at orderconfigurator.intel.com (Intel NDA required) or contact your Intel field sales representative.

1.2 Processor Support

The supported 3rd Gen Intel® Xeon® Scalable processor family processor shelves are identified as shown in the following figure.

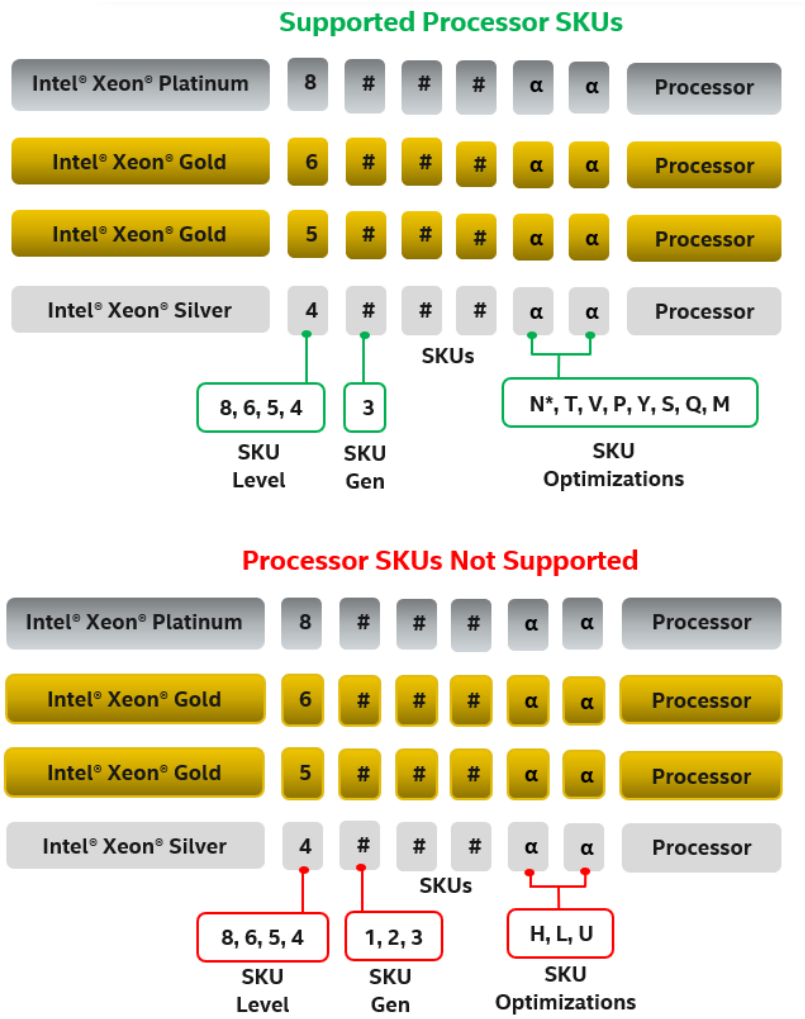


Figure 4. 3rd Gen Intel® Xeon® Scalable Processor Family Identification

Note: Supported 3rd Gen Intel® Xeon® Scalable processor SKUs must Not end in (H), (L), or (U). All other processor SKUs are supported.

*** Note:** The 8351N SKU is a 1-socket optimized SKU and is not supported on the Intel® Server D50TNP Family.

Table 1. 3rd Gen Intel® Xeon® Scalable Processor Family Feature Comparison

Feature	Platinum 8300 Processors	Gold 6300 Processors	Gold 5300 Processors	Silver 4300 Processor
# of Intel® Ultra Path Interconnect (Intel® UPI) Links	3	3	3	2
Intel® UPI Speed	11.2 GT/s	11.2 GT/s	11.2 GT/s	10.4 GT/s
Supported Topologies	2S-2UPI 2S-3UPI	2S-2UPI 2S-3UPI	2S-2UPI 2S-3UPI	2S-2UPI
Node Controller Support	No	No	No	No
Processor RAS Capability	Advanced	Advanced	Advanced	Standard
# of DDR4 Integrated Memory Controllers (IMC)	4	4	4	4
# DDR4 Channels	8	8	8	8
Intel® Turbo Boost Technology	Yes	Yes	Yes	Yes
Intel® HT Technology	Yes	Yes	Yes	Yes
Intel® AVX-512 ISA Support	Yes	Yes	Yes	Yes
Intel® AVX-512 - # of 512b FMA Units	2	2	2	2
# of PCIe* Lanes	64	64	64	64
Intel® VMD 2.0	Yes	Yes	Yes	Yes

Note: Feature may vary between processor SKUs.

Reference 3rd Gen Intel® Xeon® Scalable processor specification sheets and product briefs for additional information.

1.3 Memory Support

The Intel® Server D50TNP Family supports standard DDR4, RDIMM, and LDRIMM memory modules and Intel® Optane™ PMem (persistent memory) 200 series modules.

Note: Previous generation Intel® Optane™ PMem modules are not supported.

Note: Intel® Optane™ PMem 200 series modules are supported only in systems/modules with the Intel® Server Board D50TNP1SB.

The Intel® ServerD50TNP Family supports DDR4 DIMMs with the following features:

- Registered DDR4 (RDIMM), 3DS-RDIMM, Load Reduced DDR4 (LRDIMM), 3DS-LRDIMM
  Note: 3DS = 3-Dimensional Stacking
- All DDR4 DIMMs must support ECC
- RDIMMs and LRDIMMs with thermal sensor on-DIMM (TSOD)
- DIMM speeds of up to 3200 MT/s (for Memory configurations with 2 DIMMs per channel)
- DIMM capacities of 8 GB, 16 GB, 32 GB, 64 GB, and 128 GB
- RDIMMs organized as Single Rank (SR), Dual Rank (DR)
- 3DS-RDIMM organized as Quad Rank (QR), or Oct Rank (OR)
- LRDIMMs organized as Quad Rank (QR)
- 3DS-LRDIMM organized as Quad Rank (QR), or Oct Rank (OR)

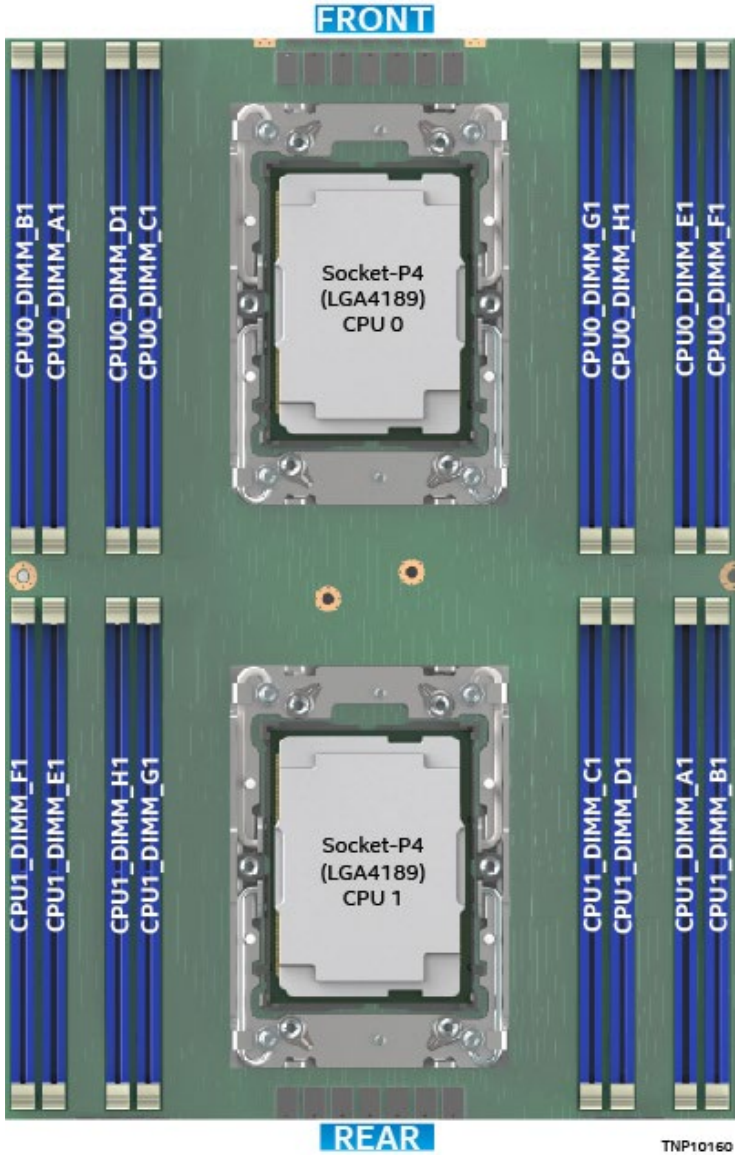
1.3.1 Memory Population

The Intel® Server Board D50TNP1SB supports memory configurations that consist of both standard DDR4 DIMMs and Intel® Optane™ PMem 200 series modules. With two processors installed, 8 memory slots are available for Intel® Optane™ PMem 200 series modules and 16 memory slots are available for DDR4 DIMMs. The Intel® Server Board D50TNP1SBCR supports up to 16 DDR4 DIMMs.

Figure 5 shows the full board layout for all memory slots on both processor sockets. Each 3rd Gen Intel® Xeon® Scalable processor supports eight memory channels using four integrated memory controllers (IMCs). Each memory channel is assigned an identifying letter A-H. On the Intel Server Board D50TNP1SB, channels A, C, E, and G each support two DIMM slots – slot 1 (blue slot for DDR4 DIMM) and slot 2 (black slot for Intel® Optane™ PMem). The remaining channels each support one DIMM slot (blue slot for DDR4 DIMM). On the Intel Server Board D50TNP1SBCR, all the channels each support one DIMM slot (blue slot for DDR4 DIMM).

Note: DDR4 DIMMs can only be installed in blue slots. Intel® Optane™ PMem modules can only be installed in black slots.

Intel® Server Board D50TNP1SB



Intel® Server Board D50TNP1SBCR

Figure 5. Memory Slot Layout

Intel DDR4 DIMM Support Disclaimer:

Intel validates and will only provide support for system configurations where all installed DDR4 DIMMs have matching "Identical" or "Like" attributes. See Table 2. A system configured concurrently with DDR4 DIMMs from different vendors will be supported by Intel if all other DDR4 "Like" DIMM attributes match.

Intel does not perform system validation testing nor will it provide support for system configurations where all populated DDR4 DIMMs do not have matching "Like" DIMM attributes as listed in Table 2.

Intel will only provide support for Intel server systems configured with DDR4 DIMMs that have been validated by Intel and are listed on Intel's Tested Memory list for the given Intel server product family.

Intel configures and ships pre-integrated L9 server systems. All DDR4 DIMMs within a given L9 server system as shipped by Intel will be identical. All installed DIMMs will have matching attributes as those listed in the *"Identical" DDR4 DIMM4 Attributes* column in Table 2.

When purchasing more than one integrated L9 server system with the same configuration from Intel, Intel reserves the right to use "Like" DIMMs between server systems. At a minimum "Like" DIMMS will have matching DIMM attributes as listed in the table below. However, the DIMM model #, revision #, or vendor may be different.

For warranty replacement, Intel will make every effort to ship back an exact match to the one returned. However, Intel may ship back a validated "Like" DIMM. A "Like" DIMM may be from the same vendor but may not be the same revision # or model #, or it may be an Intel validated DIMM from a different vendor. At a minimum, all "Like" DIMMs shipped from Intel will match attributes of the original part according to the definition of "Like" DIMMs in the following table.

Table 2. DDR4 DIMM Attributes Table for "Identical" and "Like" DIMMs

- DDR4 DIMMs are considered "Identical" when ALL listed attributes between the DIMMs match
- Two or more DDR4 DIMMs are considered "Like" DIMMs when all attributes minus the Vendor, and/or DIMM Part # and/or DIMM Revision#, are the same.

Attribute	"Identical" DDR4 DIMM Attributes	"Like" DDR4 DIMM Attributes	Possible DDR4 Attribute Values
Vendor	Match	Maybe Different	Memory Vendor Name
DIMM Part #	Match	Maybe Different	Memory Vendor Part #
DIMM Revision #	Match	Maybe Different	Memory Vendor Part Revision #
SDRAM Type	**Match**	**Match**	DDR4
DIMM Type	**Match**	**Match**	RDIMM, LRDIMM
Speed (MHz)	**Match**	**Match**	2666, 2933, 3200
Voltage	**Match**	**Match**	1.2V
DIMM Size (GB)	**Match**	**Match**	8GB, 16GB, 32GB, 64GB, 128GB, 256GB
Organization	**Match**	**Match**	1Gx72; 2Gx72; 4Gx72; 8Gx72; 16Gx72; 32Gx72
DIMM Rank	**Match**	**Match**	1R, 2R, 4R, 8R
DRAM Width	**Match**	**Match**	x4, x8
DRAM Density	**Match**	**Match**	8Gb, 16Gb

1.4 Intel® Server Board D50TNP Overview

The Intel® Server D50TNP Family offers two types of boards: D50TNP1SB and D50TNP1SBCR.

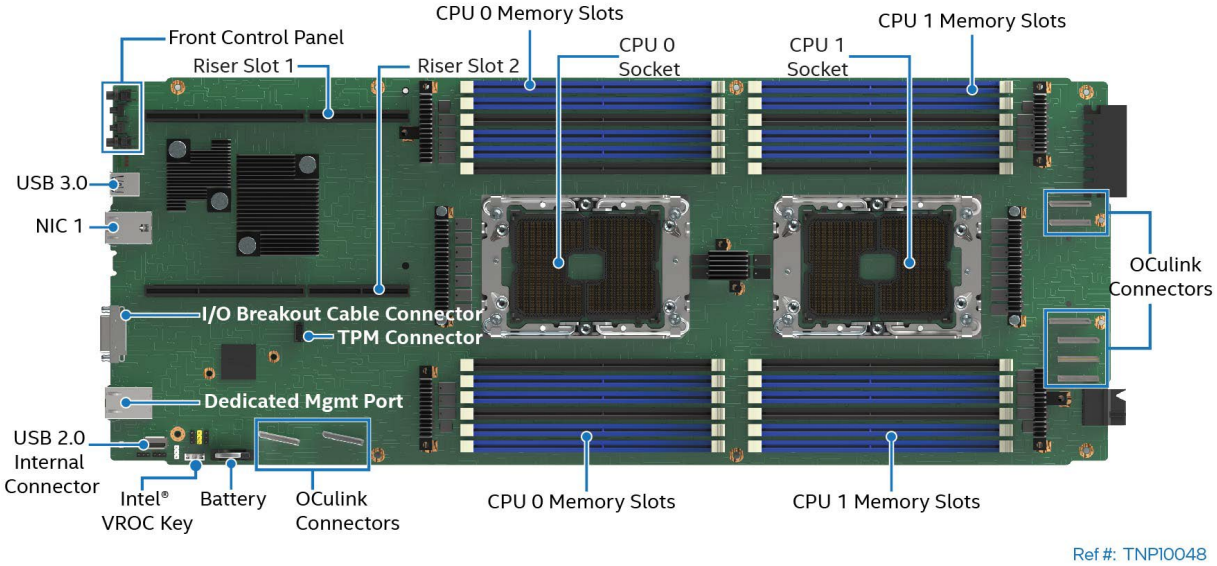


Figure 6. Intel® Server Board D50TNP1SB

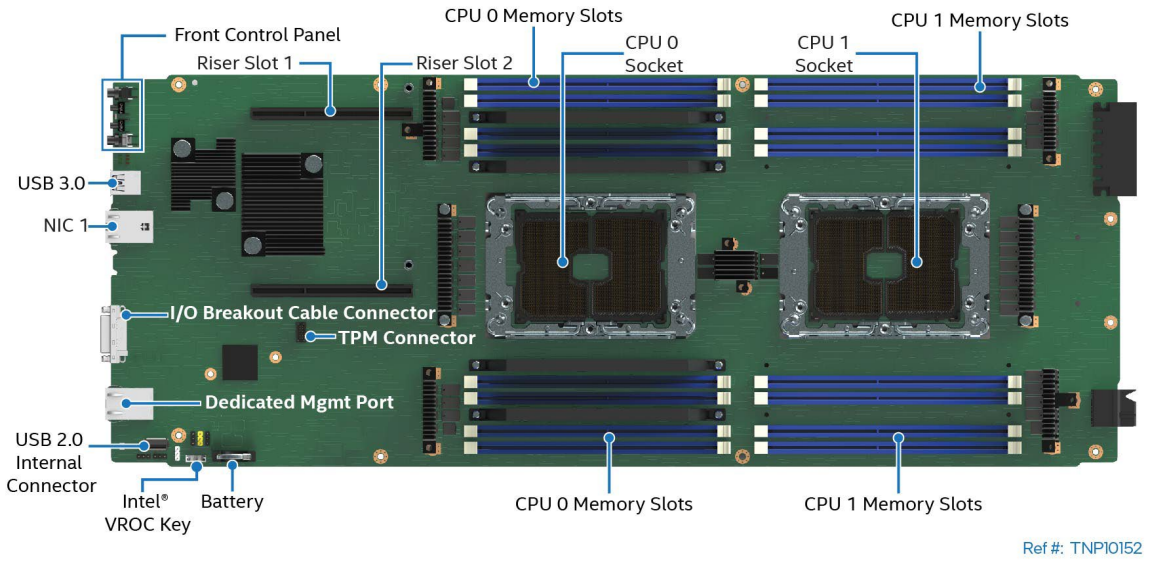


Figure 7. Intel® Server Board D50TNP1SBCR

Table 3. Intel® Server Board D50TNP Features

Feature	D50TNP1SB	D50TNP1SBCR

Processor Support	• Dual Socket-P4 LGA4189
	• Supported 3rd Gen Intel® Xeon® Scalable processor family SKUs:
	  ○ Intel® Xeon® Platinum 8300 processor
	  ○ Intel® Xeon® Gold 6300 processor
	  ○ Intel® Xeon® Gold 5300 processor
	  ○ Intel® Xeon® Silver 4300 processor
	• UPI links: three at 11.2 GT/s (Platinum and Gold SKUs) or two at 10.4 GT/s (Silver SKU)
	Note: Supported 3rd Gen Intel® Xeon® Scalable processor SKUs must Not end in (H), (L), or (U). All other processor SKUs are supported.
	Note: Previous generation Intel® Xeon® processor and Intel® Xeon® processor Scalable families are not supported.	

Maximum Processor Thermal Design Power (TDP)	• 3rd Gen Intel® Xeon® Scalable processors up to 270 W (server board only) **Note:** See Table 4. **Note:** The maximum supported processor TDP at the system level may be lower than what the server board can support. Supported power, thermal, and configuration limits of the chosen server chassis need to be considered to determine if the system can support the maximum processor TDP limit of the server board. See the server chassis/system documentation for additional guidance.	

Chipset	• Intel® C621A Platform Controller Hub (PCH) chipset
	• Embedded features enabled on this server board:
	  ○ SATA III support
	  ○ USB 3.0 support
	  ○ PCIe 3.0 support	

Memory Support	• Up to 16 DDR4 DIMMs + up to 8 Intel® Optane™ persistent memory 200 series modules. • All DDR4 DIMMs must support ECC • Registered DDR4 (RDIMM), 3DS-RDIMM, Load Reduced DDR4 (LRDIMM), 3DS-LRDIMM **Note:** 3DS = 3-dimensional Stacking • Up to 3200 MT/s memory data transfer rates • Up to 2 TB DDR4 memory capacity for both processors (1 TB per processor), for all processor SKUs • Up to 6 TB DDR4 and Intel® Optane™ PMem combined memory capacity for both processors (3 TB per processor), for all processor SKUs supporting both DDR4 and Intel® Optane™ PMem • DDR4 standard voltage of 1.2 V **Note:** The speed supported depends on the installed processor.	• Up to 16 DDR4 DIMMs • All DDR4 DIMMs must support ECC • Registered DDR4 (RDIMM), 3DS-RDIMM, Load Reduced DDR4 (LRDIMM), 3DS-LRDIMM **Note:** 3DS = 3-dimensional Stacking • Up to 3200 MT/s memory data transfer rates • Up to 2 TB DDR4 memory capacity for both processors (1 TB per processor), for all processor SKUs • DDR4 standard voltage of 1.2 V **Note:** The speed supported depends on the installed processor.

Feature	D50TNP1SB	D50TNP1SBCR
Front Panel Support		

I/O Ports	• One USB 3.0 port
	• One I/O breakout cable connector supporting the following:
	  ○ Two USB 3.0 ports (dual-stack)
	  ○ One VGA connector (16 MB of DDR4 video memory)
	  ○ One serial port connector. The port follows Advanced Technology (AT) pinout specifications.
	Note: The I/O breakout cable is available as an accessory option (iPC: AXXCONNTDBG).	

Networking	• One external 10GBASE-T Ethernet port (RJ45) • One external dedicated 1000BASE-T Ethernet management port (RJ45)	
LEDs	• Module status • Module ID	
Buttons	• Power • Module ID • Module cold reset • Non-maskable interrupt (NMI)	
Expansion Options		
Riser Slots	Two riser slots on the server board: **Riser Slot 1** • x16 1U single PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 0 • x32 2U dual PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 0 and CPU 1 • x4 SATA/PCIe* NVMe* M.2 SSD option supporting PCIe* 3.0 lanes routed from chipset **Note:** PCIe* lanes routed from processor/chipset have Intel® VROC 7.5 (VMD NVMe* RAID) support using Intel VROC key (accessory option) **Riser Slot 2** • x16 1U single PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 1 • x24 2U dual PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 0 and CPU 1 • x4 SATA/PCIe* NVMe* M.2 SSD option supporting PCIe* 3.0 lanes routed from chipset **Note:** PCIe* lanes routed from processor/chipset have Intel® VROC 7.5 (VMD NVMe* RAID) support using Intel VROC key (accessory option)	Two riser slots on the server board: **Riser Slot 1** • x16 1U single PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 0 • x4 SATA/PCIe* NVMe* M.2 SSD option supporting PCIe* 3.0 lanes routed from chipset **Note:** PCIe* lanes routed from processor/chipset have Intel® VROC 7.5 (VMD NVMe* RAID) support using Intel VROC key (accessory option) **Riser Slot 2** • x16 1U single PCIe* slot riser card option supporting PCIe* 4.0 lanes routed from CPU 1 • x4 SATA/PCIe* NVMe* M.2 SSD option supporting PCIe* 3.0 lanes routed from chipset **Note:** PCIe* lanes routed from processor/chipset have Intel® VROC 7.5 (VMD NVMe* RAID) support using Intel VROC key (accessory option)

Feature	D50TNP1SB	D50TNP1SBCR
Supported Onboard Connectors and Headers		
PCIe* NVMe* Interface Support	• Four OCuLink connectors with x8 PCIe* 4.0 lanes routed from CPU 0 • Four OCuLink connectors with x8 PCIe* 4.0 lanes routed from CPU 1 **Note:** PCIe* lanes routed from processor/chipset have Intel® VROC (VMD NVMe* RAID) support using Intel VROC key (accessory option)	OCuLink connectors not available
USB Support	• One USB 2.0 onboard type-A connector for internal use **Important Note:** Not all Intel Server Boards D50TNP1SB and D50TNP1SBCR ship with the USB 2.0 onboard type-A connector installed. Intel does not support requests to have this connector installed on Intel Server Boards D50TNP1SB and D50TNP1SBCR that are shipped without the connector.	
Security Support	• Intel® Platform Firmware Resilience (Intel® PFR) technology • Intel® Total Memory Encryption (Intel® TME) • Intel® Software Guard Extensions (Intel® SGX) • Intel® CBnT – Converged Intel® Boot Guard and Trusted Execution Technology (Intel® TXT) • Trusted platform module 2.0 (Rest of World) – iPC AXXTPMENC8 (accessory option) • Trusted platform module 2.0 (China Version) – iPC AXXTPMCHNE8 (accessory option)	
Serviceability		
Server Management	• Integrated Baseboard Management Controller (BMC) • Intelligent Platform Management Interface (IPMI) 2.0 compliant • Redfish* compliant • Support for Intel® Data Center Manager (Intel® DCM) • Support for Intel® Server Debug and Provisioning Tool (Intel® SDP Tool) • One external dedicated 1000BASE-T Ethernet management port (RJ45) • Intel® Light-Guided Diagnostics included onboard LEDs	

Server Management Processor (SMP)	• ASpeed* AST2500 Advanced PCIe Graphics and Remote Management Processor
	• Embedded features enabled on this server board:
	  ○ Baseboard Management Controller (BMC)
	  ○ 2D Video Graphics Adapter	

Onboard Configuration and Service Jumpers	• BIOS load defaults • BIOS Password clear • Intel® Management Engine (Intel® ME) firmware force update • BMC force update • BIOS Security Version Number (SVN) Downgrade • BMC SVN Downgrade	
BIOS	• Unified Extensible Firmware Interface (UEFI)-based BIOS (legacy boot not supported)	

Feature	D50TNP1SB	D50TNP1SBCR
Module Support	• D50TNP1MHCPAC • D50TNP2MHSVAC • D50TNP2MHSTAC • D50TNP2MFALAC See Table 4 for more information on Intel® D50TNP Modules.	• D50TNP1MHCRAC • D50TNP1MHEVAC • D50TNP1MHCRLC See Table 4 for more information on Intel® D50TNP Modules.

1.5 Intel® D50TNP Modules Overview

The Intel® Server D50TNP Family offers a variety of modules, where each module within a system configuration is independently operated from the others. The Installed modules within a system chassis share resources like power and cooling. Table 5 describes the different ways an Intel® Server System D50TNP can be configured.

Table 4. Intel® D50TNP Modules

Module Type	iPC	Height	Width	Cooling	Maximum Processor Thermal Design Power (TDP)[1]	Modules per Chassis
Compute	D50TNP1MHCPAC	1U	Half width	Air cooled	205 W	Up to four
	D50TNP1MHCRAC				205 W	
	D50TNP1MHEVAC				270 W	
	D50TNP1MHCRLC			Liquid cooled	270 W	Up to four
Management	D50TNP2MHSVAC	2U	Half width	Air cooled	270 W	Up to two
Storage	D50TNP2MHSTAC	2U	Half width	Air cooled	205 W	Up to two
Accelerator	D50TNP2MFALAC	2U	Full width	Air cooled	270 W	One

Note 1: See the Intel® Server D50TNP Family Technical Product Specification for detailed information on TDP.

Mixing different types of modules in the same chassis can be done as follows:

- Up to two 1U air-cooled Compute Modules with one 2U Management Module
- Up to two 1U air-cooled Compute Modules with one 2U Storage Module
- One 2U Management Module with one 2U Storage Module

Note: Mixing liquid-cooled modules with air-cooled modules in a single system is not supported.
Note: Mixing 1U air-cooled Compute Module with regular processor heat sinks and 1U Compute Module with EVAC processor heat sinks in a single system is not supported.

Figure 8. Air-cooled Compute Modules D50TNP1MHCPAC and D50TNP1MHCRAC

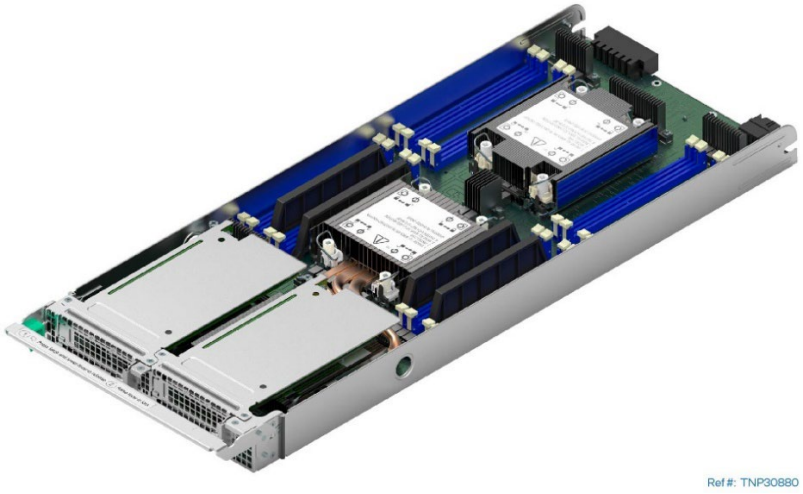


Figure 9. Air-cooled Compute Module with EVAC heat sink D50TNP1MHEVAC

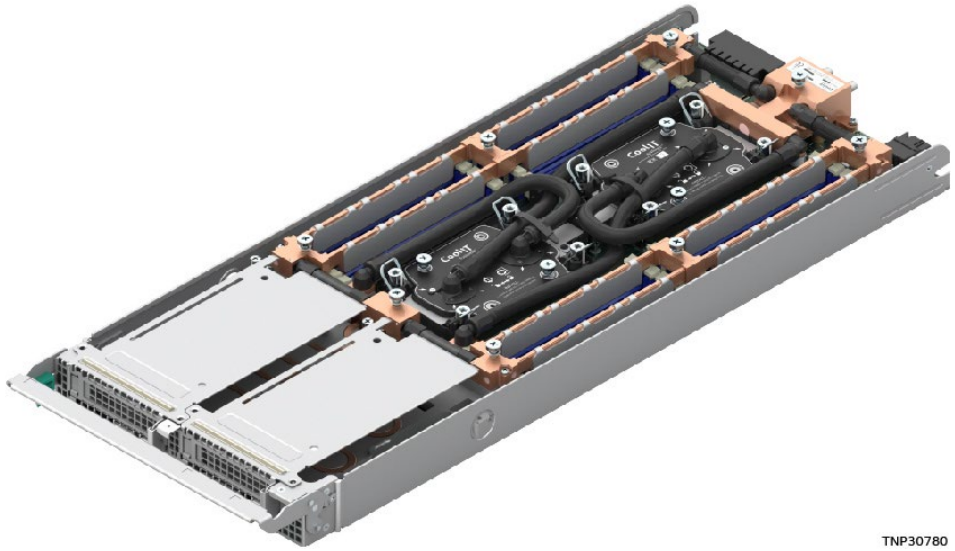


Figure 10. Liquid-cooled Compute Module D50TNP1MHCRLC

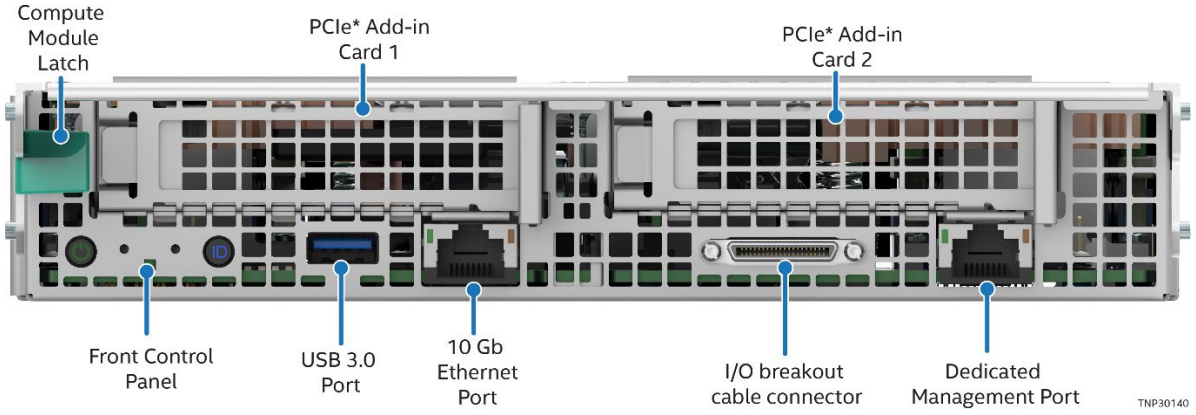


Figure 11. 1U Compute Module Front Panel Features

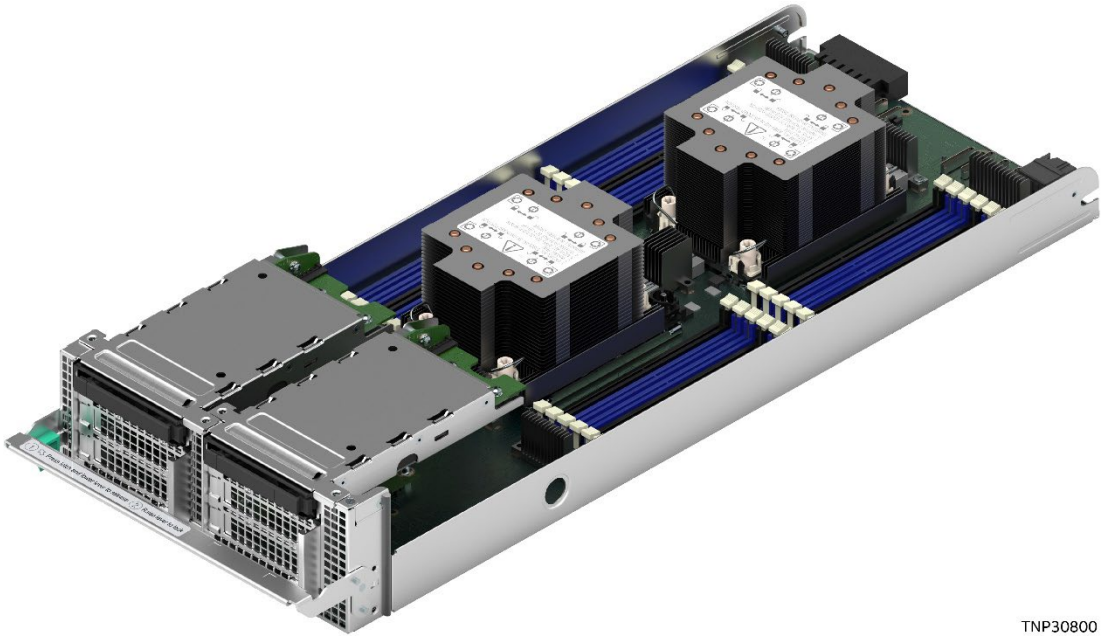


Figure 12. Air-cooled Management Module

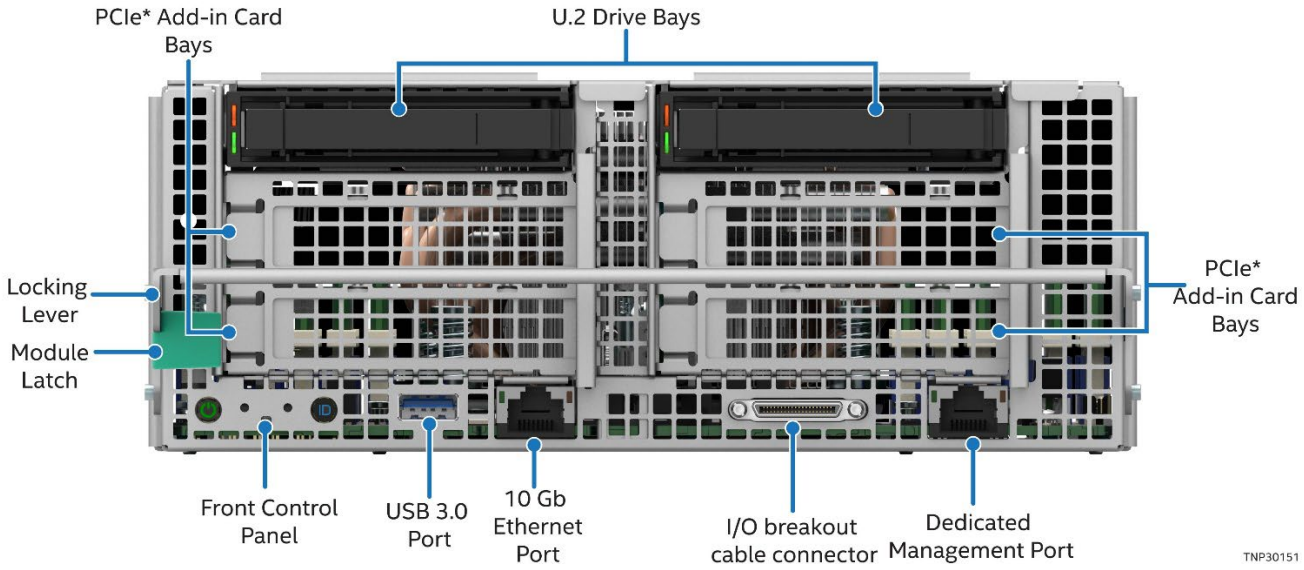


Figure 13. 2U Management Module Front Panel Features

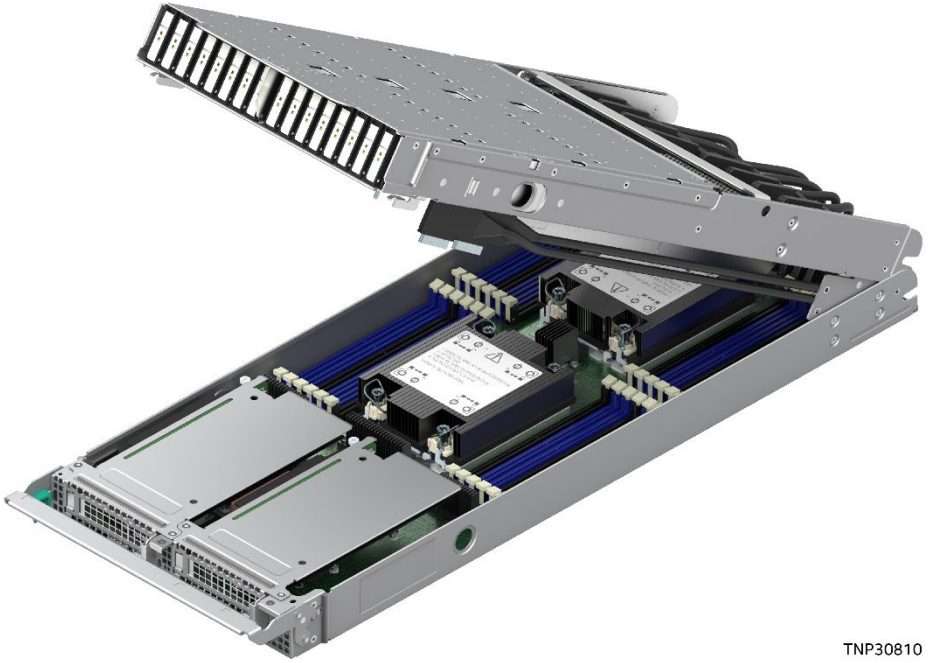


Figure 14. Air-cooled Storage Module

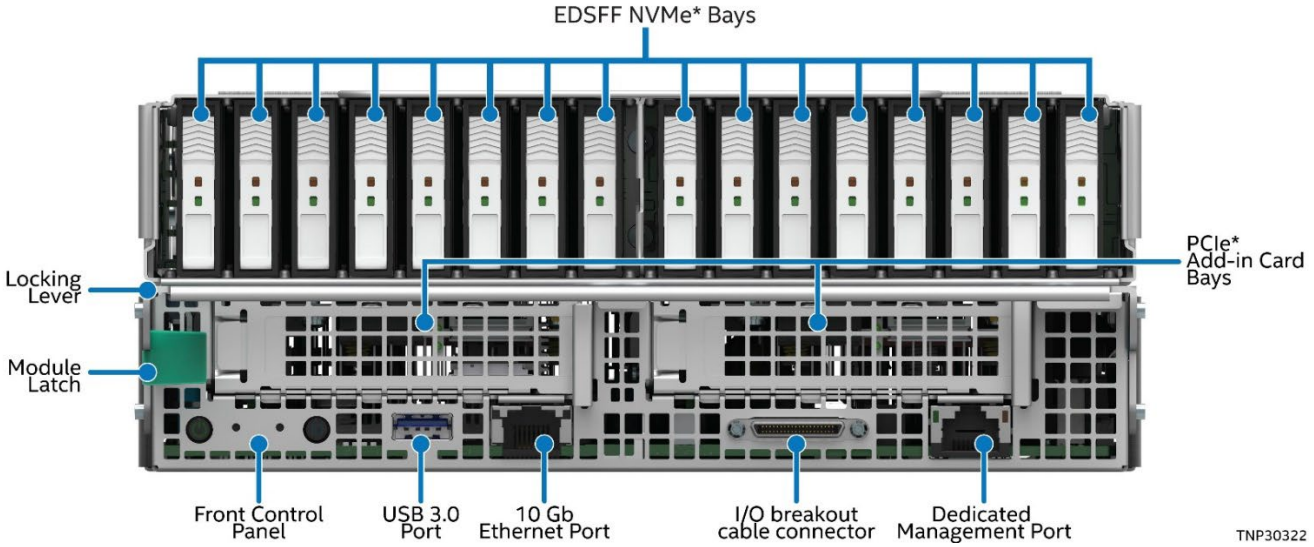


Figure 15. 2U Storage Module Front Panel Features

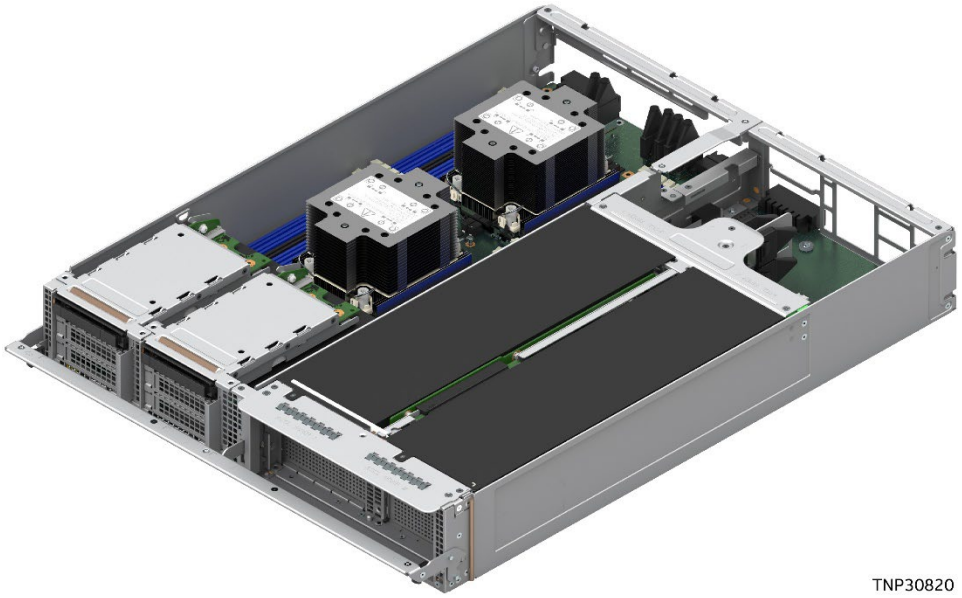


Figure 16. Air-Cooled Accelerator Module

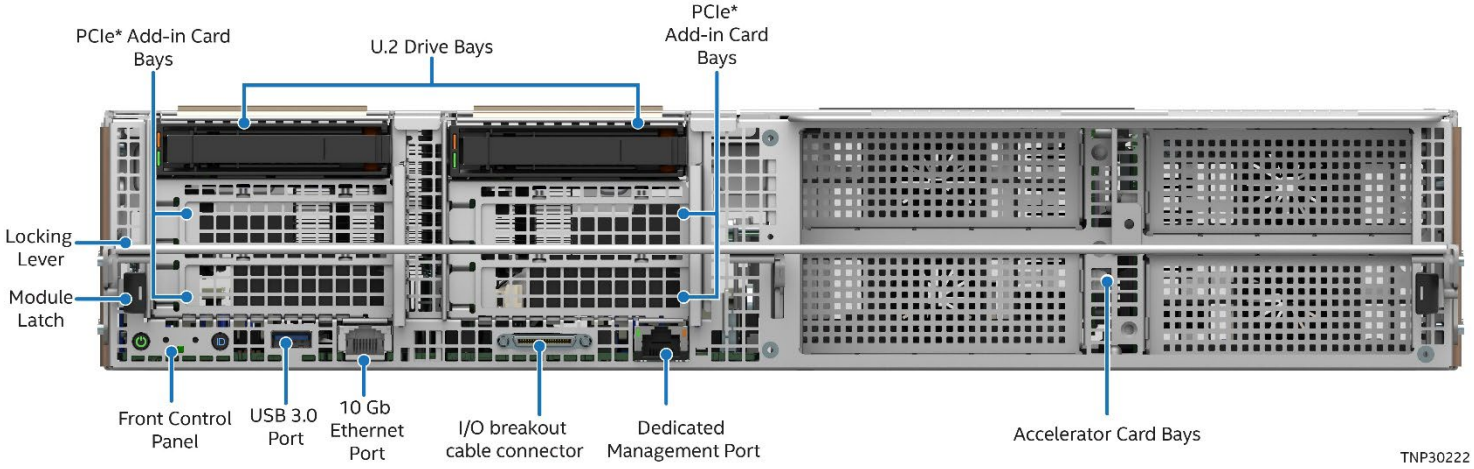


Figure 17. 2U Accelerator Module Front Panel Features

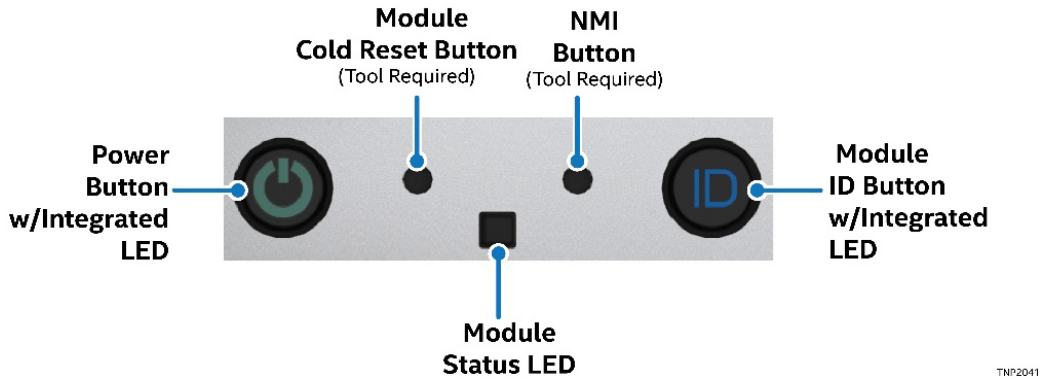


Figure 18. Front Control Panel Features for All Modules

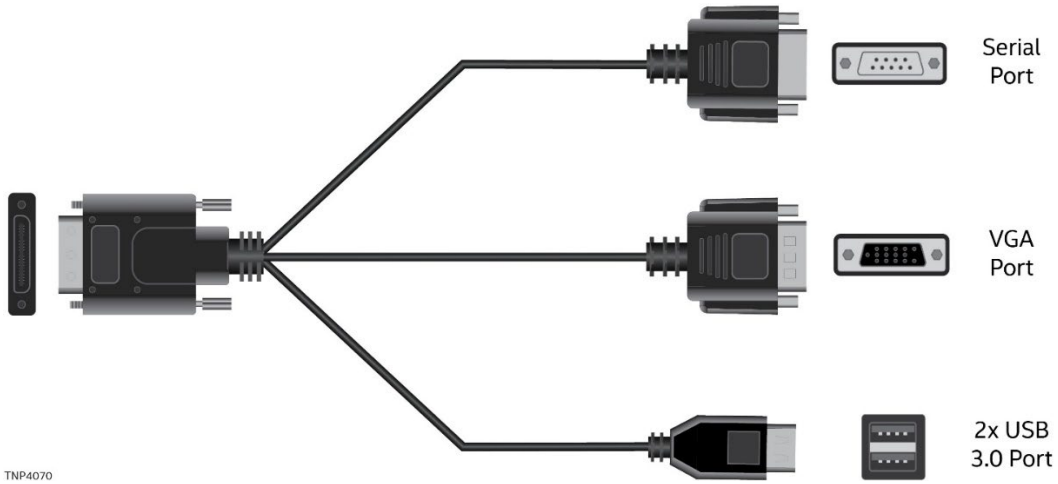


Figure 19. I/O Breakout Cable Connector Identification

1.6 Intel® Server System D50TNP / Chassis Overview

As a building block, the Intel® Server D50TNP Family includes four Intel® Server Chassis FC2000 products. These four chassis-only products are listed as follows. See Table 5 for a feature list of system and chassis-only features.

- 2U Half-width configuration, liquid cooled, 2100 W PSU chassis: – **iPC FC2HLC21W3**
  - Supports up to four 1U half-width modules (liquid cooled)–**See Important Note below**
- 2U Half-width configuration, air cooled, 2100 W PSU chassis – **iPC FC2HAC21W3**
  - Supports up to four 1U half-width modules (air cooled)
  - Supports up to two 2U half-width modules (air cooled)
  - Supports one 2U half-width module and two 1U half-width modules (air cooled)
- 2U Half-width configuration, air cooled, 1600 W PSU chassis–iPC **FC2HAC16W3**
  - Supports up to two 2U half-width modules (air cooled)
- 2U Full-width configuration, air cooled, 1600 W PSU chassis–iPC **FC2FAC16W3**
  - Supports one 2U full-width module (air cooled)

Important Note: Intel® Server System D50TNP 1U half-width liquid-cooled Compute Modules come with the DIMM retention clips included. If the chassis with liquid cooled configuration, FC2HLC21W3, is shipped with fewer than four Compute Modules, the DIMM retention clips could come loose during shipping. Multiple options to avoid the situation are:

- Ship the Intel® Server System D50TNP with all four liquid-cooled Compute Modules installed.
- Ship the liquid-cooled Compute Modules separately packaged.
- Fill the empty slots in the chassis with packaging materials when shipping with less than four liquid-cooled Compute Modules installed.

Table 5. Intel® Server Chassis D50TNP Feature Set

Feature	Description			
	Chassis SKU iPC FC2HLC21W3	**Chassis SKU iPC FC2HAC21W3**	**Chassis SKU iPC FC2HAC16W3**	**Chassis SKU iPC FC2FAC16W3**
Chassis Definition	FC2000 half-width configuration, Liquid Cooled (2100 W)	FC2000 half-width configuration, Air Cooled (2100 W)	FC2000 half-width configuration, Air Cooled (1600 W)	FC2000 full-width configuration, Air Cooled (1600 W)
Chassis Type	2U, rackmount, multi-module			2U, rackmount, single module
Chassis Dimensions	• 865 x 441.8 x 86.8 mm			
Packaging Dimensions	• 1192 x 758 x 317 mm (L x W x H)			

Feature	Description			
	Chassis SKU iPC FC2HLC21W3	**Chassis SKU iPC FC2HAC21W3**	**Chassis SKU iPC FC2HAC16W3**	**Chassis SKU iPC FC2FAC16W3**
Supported Intel® D50TNP Modules	• Up to four 1U half-width modules (liquid cooled)	• Up to four 1U half-width modules (air cooled) • One 2U half-width module and two 1U half-width modules (air cooled) • Up to two 2U half-width modules (air cooled)	• Up to two 2U half-width modules (air cooled)	• One 2U full-width Accelerator Module

Cooling	**Liquid-cooled configurations:**
	• Three 60 x 60 x 56 mm dual-rotor hot-swap system fans with support for fan redundancy
	• Liquid-cooling loop (per module)
	• Liquid-cooling plumbing connections on the back of the chassis
	• One fan per installed PSU
		Air-cooled configurations:
		• Five dual-rotor hot-swap system fans with support for fan redundancy
		  ○ Three 60 x 60 x 56 mm fans
		  ○ Two 80 x 80 x 80 mm fans
		• One fan per installed power supply unit (PSU)		

Power	Three 2100 W AC power supplies with power redundancy support (dependent on system configuration).		Three 1600 W AC power supplies with power redundancy support (dependent on system configuration).	
Rack Mount Kit (FCXXRAILKIT)	• Tool-less installation • Fixed position **Note:** Rack mount kit is included with chassis.			
Serviceability	Modular chassis features for simplified serviceability: • Fully independent Intel® D50TNP Modules • Hot-swap power supplies • Hot-swap system fans • Hot-swap U.2 solid state drive (SSD) storage (dependent on Intel® D50TNP Module) • Hot-swap full-length PCIe* NVMe* EDSFF SSDs (dependent on Intel® D50TNP Module)			
Operating Temperature	10–35°C ambient temperature			
Server Management	Optional Ethernet Management Port (EMP) to remotely manage the Intel® D50TNP Modules			

All systems in the Intel® Server D50TNP Family feature front-loading modules. The following illustrations provide system views for all supported system configurations.

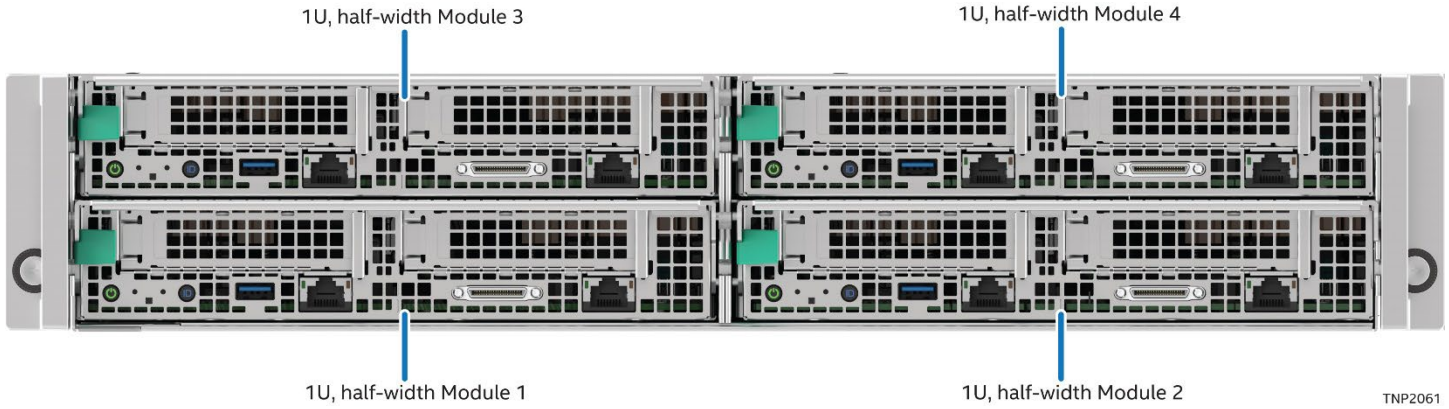


Figure 20. Module Identification for Four-Module System Configuration – Chassis IPCs: FC2HLC21W3 and FC2HAC21W3

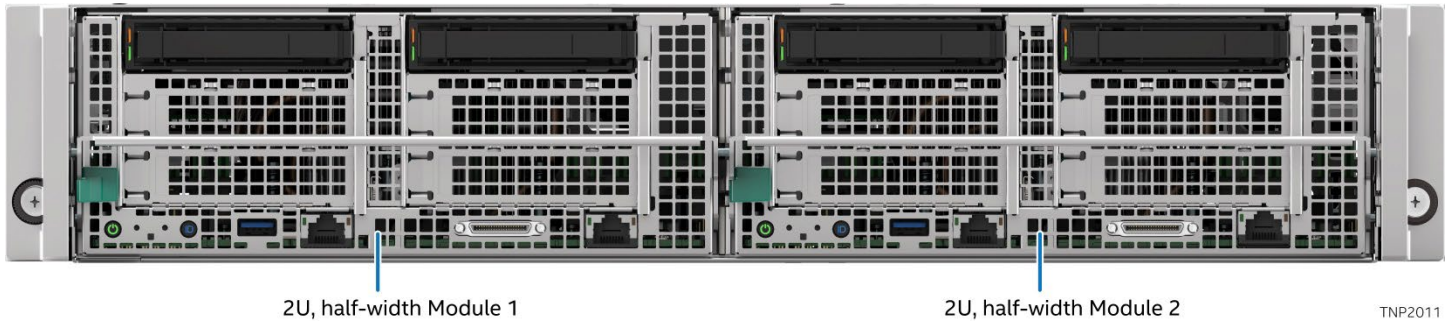


Figure 21. Module Identification for Two-Module System Configuration – Chassis IPCs: FC2HLC21W3, FC2HAC21W3, FC2HAC16W3

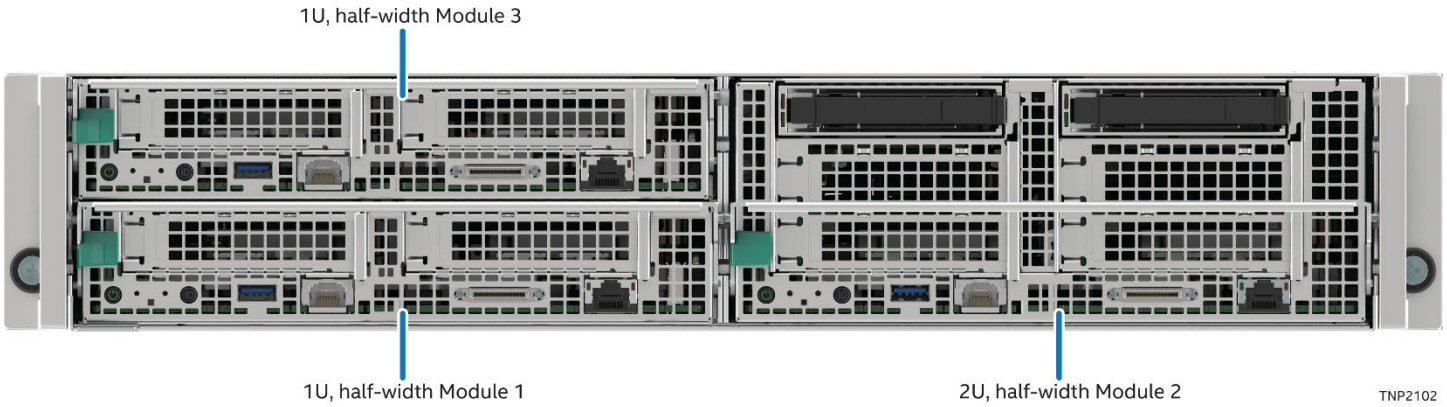


Figure 22. Module Identification for Three-Module System Configuration – Chassis IPCs: FC2HLC21W3 and FC2HAC21W3

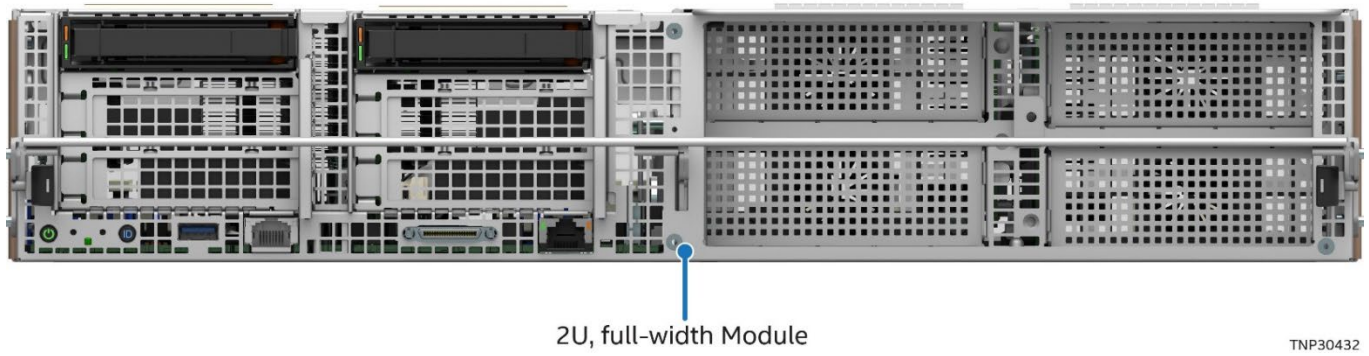


Figure 23. Module Identification for One-Module System Configuration – Chassis iPC: FC2FAC16W3

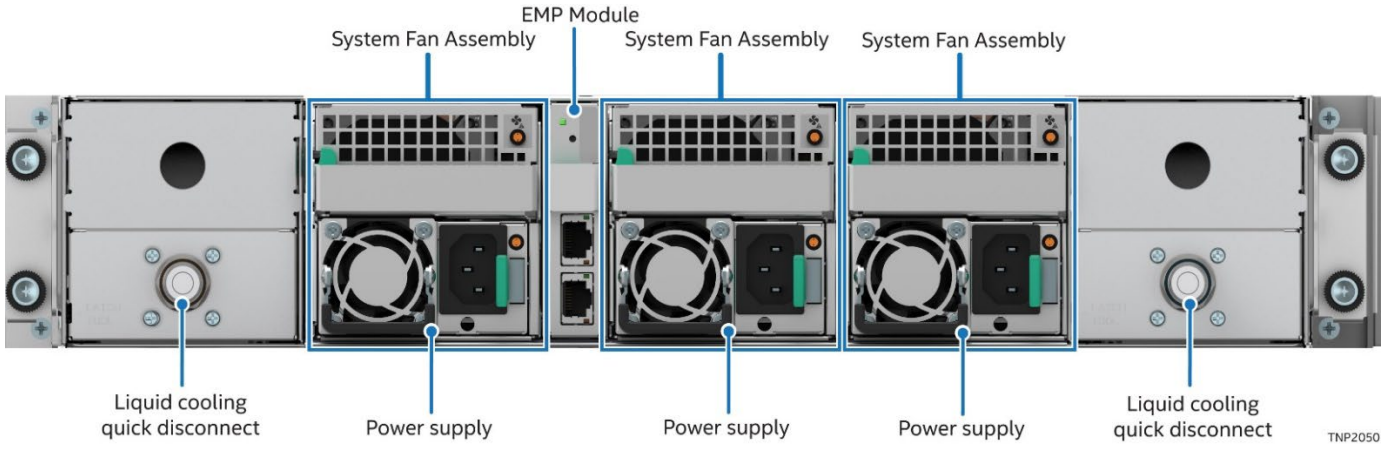


Figure 24 Liquid-Cooled System Back View

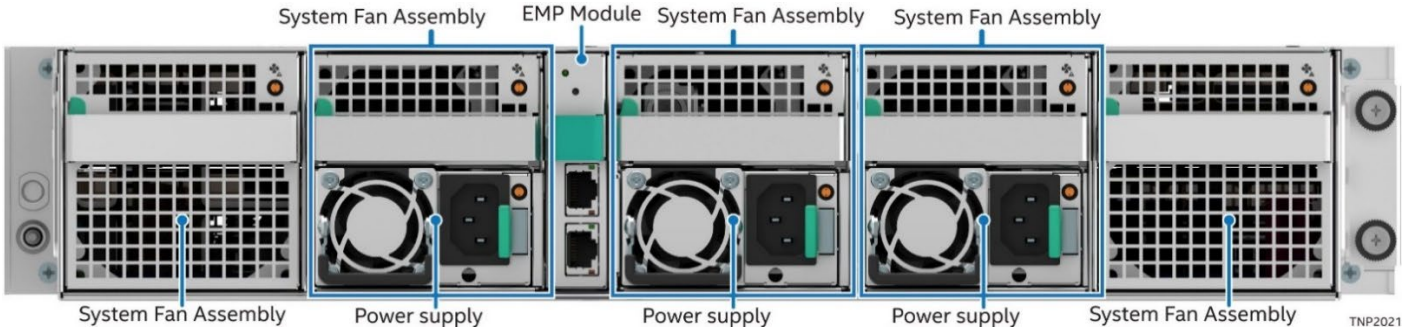


Figure 25. Air Cooled System Back View

1.7 Reference Documents and Support Collaterals

For additional information, see the product support collaterals specified in the following table. The following webpage provides support information for the Intel® Server D50TNP Family: https://www.intel.com/content/www/us/en/support/products/201583.html

Table 6. Intel® Server D50TNP Family Reference Documents and Support Collaterals

Topic	Document Title or Support Collateral	Document Classification
Technical information about this product family	*Intel® Server D50TNP Family Technical Product Specification*	Public
System integration instructions and service guidance	*Intel® Server D50TNP Family Integration and Service Guide*	Public
Server configuration guidance and compatibility	*Intel® Server D50TNP Family Configuration Guide*	Public
Information on the Integrated BMC Web Console	*Integrated Baseboard Management Controller Web Console (Integrated BMC Web Console) User Guide*	Public
BIOS technical information on Intel® Server D50TNP Family	*BIOS Firmware External Product Specification (EPS)*	Intel Confidential
BIOS setup information on Intel® Server D50TNP Family	*BIOS Setup Utility User Guide*	Public
BMC technical information on Intel® Server D50TNP Family	*Integrated Baseboard Management Controller Firmware External Product Specification (EPS)*	Intel Confidential
Base specifications for the IPMI architecture and interfaces	*Intelligent Platform Management Interface Specification Second Generation v2.0*	Intel Confidential
Specifications for the PCIe* 3.0 architecture and interfaces	*PCIe Base Specification, Revision 3.0* http://www.pcisig.com/specifications	Public
Specifications for the PCIe* 4.0 architecture and interfaces	*PCIe Base Specification, Revision 4.0* http://www.pcisig.com/specifications	Public
TPM for PC Client specifications	*TCG PC Client Platform TPM Profile Specifications revision 2.0*	Public
Functional specifications of 3rd Gen Intel® Xeon® Scalable processor family	*3rd Generation Intel® Xeon® Scalable Processors, Codename Ice Lake-SP External Design Specification (EDS):* Document IDs: 574451, 574942, 575291	Intel Confidential
Processor thermal design specifications and recommendations	*3rd Generation Intel® Xeon® Scalable Processor, Codename Ice Lake-SP and Cooper Lake-SP - Thermal and Mechanical Specifications and Design Guide (TMSDG)*: Document ID 574080	Intel Confidential
BIOS and BMC Security Best Practices	*Intel® Server Systems Baseboard Management Controller (BMC) and BIOS Security Best Practices White Paper* https://www.intel.com/content/www/us/en/support/articles/000055785/server-products.html	Public
Managing an Intel Server Overview	*Managing an Intel Server System 2020* https://www.intel.com/content/www/us/en/support/articles/000057741/server-products.html	Public

Topic	Document Title or Support Collateral	Document Classification
Technical information on Intel® Optane™ persistent memory 200	*Intel® Optane™ Persistent Memory 200 Series Operations Guide*	Intel Confidential
Setup information for Intel® Optane™ persistent memory 200	*Intel® Optane™ Persistent Memory Startup Guide*	Public
Latest system software updates: BIOS and Firmware	*Intel® System Update Package (SUP) for Intel® Server D50TNP Family*	Public
	Intel® Server Firmware Update Utility - Various operating system support	
	Intel® Server Firmware Update Utility User Guide	
To obtain full system information	*Intel® Server Information Retrieval Utility - Various operating system support*	Public
	Intel® Server Information Retrieval Utility User Guide	
To configure, save, and restore various system options	*Intel® Server Configuration Utility - Various operating system support*	Public
	Intel® Server Configuration Utility User Guide	
Product Warranty Information	*Warranty Terms and Conditions* https://www.intel.com/content/www/us/en/support/services/000005886.html	Public
Safety and Regulatory Compliance Information	*Intel® Server D50TNP Family Technical Product Specification*	Public
Intel® Data Center Manager (Intel® DCM) information	*Intel® Data Center Manager (Intel® DCM) Product Brief* https://software.intel.com/content/www/us/en/develop/download/dcm-product-brief.html	Public
	Intel® Data Center Manager (Intel® DCM) Console User Guide https://software.intel.com/content/www/us/en/develop/download/dcm-user-guide.html	Public

Note: Intel Confidential documents are made available under a Non-Disclosure Agreement (NDA) with Intel and must be ordered through your local Intel representative.

2. Server Building Block Options

Server building blocks are offered to provide the option of choosing from available Intel® Server D50TNP Family components to create a custom system configuration from the chassis up. Each building block component and optional accessory is purchased separately and assembled by a system integrator. At a minimum, a base functional server system using building blocks requires the following:

- Liquid or air cooled 2U Intel® Server Chassis from the FC2000 chassis family
- Up to four 1U or up to two 2U modules from the Intel® D50TNP Module options (see Table 5 for details)
- Two processors per module
- Memory
- Storage devices
- Liquid cooling kit (required for liquid-cooled Intel® D50TNP modules only)

Note: Mixing compute modules in one chassis is supported only if the modules are the same cooling type.

Optional Intel accessories include the following:

- NVMe* Intel® Virtual RAID on Chip (Intel® VROC) activation key
- Liquid cooling front Voltage Regulator thermal interface material compound and application tools (required for liquid-cooled Intel® D50TNP Modules only)
- I/O breakout cable with support for serial port, video port, and USB 2.0 ports
- Accelerator add-in card specific kit with metal bracket and power cable (required for Accelerator Module D50TNP2MFALAC only)

See Chapter 3 for available accessory options.

2.1 Intel® Server Board D50TNP Options

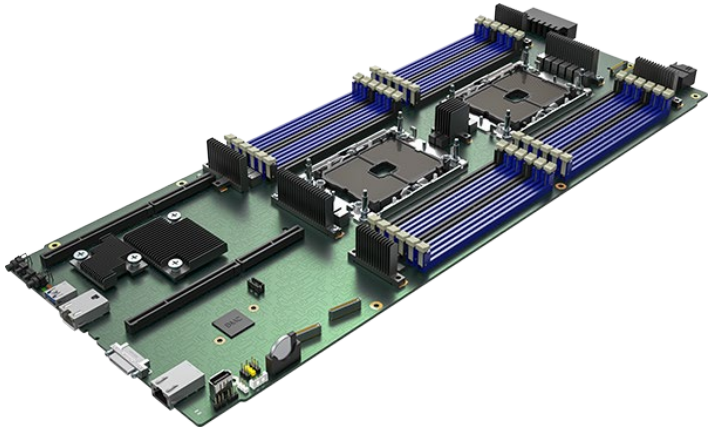
The product tables in this section provide order code information and detailed descriptions for each available board option. The parts listed as included are ship along components in the product BOM.

For optional accessories, see Chapter 3.

Note: Items identified with an iPC (Intel Product Code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table include items identified by description and by iPN (Intel Part Number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 7. Intel® Server Board D50TNP1SB Specifications

Intel® Server Board D50TNP1SB
Intel® Server Board D50TNP



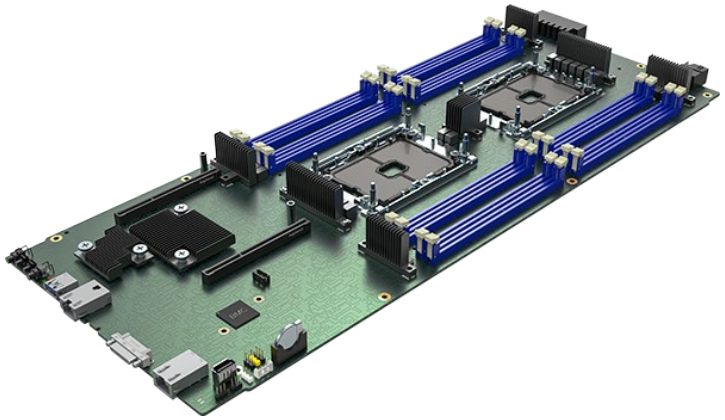
iPC	D50TNP1SB
MM#	99A2AT
UPC	00735858469319
EAN	5032037207881
MOQ	1

Product type	Server board only product or spare FRU
Form factor	Half-width
Packaged gross wt.	6.72 lbs. (3.05 kg)
Un-packaged net wt.	3.73 lbs. (1.69 kg)
Dimensions	543.56 x 211.58 x 2.23 mm (L x W x H)

Included	**Required Items (sold separately)–If purchased as building block**	**Optional Accessories (sold separately)–If purchased as building block**
(24)–DIMM slots with supports for standard DDR4 and Intel® Optane™ persistent memory 200 series (8)–PCIe* NVMe* OCuLink connectors (2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family–iPN J98484-xxx (9)–Heat sinks for voltage regulators See Table 4 for the complete board feature set.	(2) – 3rd Gen Intel® Xeon® Scalable processor family See Section 1.2 for processors supported. Up to (16) ECC standard DDR4 memory and up to (8) Intel® Optane™ persistent memory 200 series See Section 1.3 for memory supported.	(1)–Intel® Virtual RAID on CPU (Intel® VROC)–Standard Model Key–iPC **VROCSTANMOD** **OR** (1)–Intel® Virtual RAID on CPU (Intel® VROC) – Premium Model Key–iPC **VROCPREMMOD** (1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR** (1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8** See Chapter 3 for all available accessory options.

Table 8. Intel® Server Board D50TNP1SBCR Product Specifications

Intel® Server Board D50TNP1SBCR
Intel® Server Board D50TNP DDR4 Only



iPC	D50TNP1SBCR
MM#	99AA23
UPC	00735858469326
EAN	5032037207898
MOQ	1

Product type	Server board only product or spare FRU
Form factor	Half-width
Packaged gross weight.	6.77 lbs. (3.07 kg)
Un-packaged net wt.	3.73 lbs. (1.69 kg)
Dimensions	543.56 x 211.58 x 2.23 mm (L x W x H)

Included– If purchased as building block or spare FRU	**Required Items (sold separately) – If purchased as building block**	**Optional Accessories (sold separately) – If purchased as building block**
(16)–DIMM slots with supports for standard DDR4 (2)–Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx (9)–Heat sinks for voltage regulators See Table 4 for the complete board feature set.	(2) – 3rd Gen Intel® Xeon® Scalable processor family See Section 1.2 for processors supported. Up to (16) ECC standard DDR4 memory See Section 1.3 for memory supported.	(1)–Intel® Virtual RAID on CPU (Intel® VROC)–Standard Model Key–iPC **VROCSTANMOD** (1)–Intel® Trusted Platform Module (TPM) 2.0 **- iPC AXXTPMENCOR** (1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8** See Chapter 3 for all available accessory options.

2.2 Intel® D50TNP Module Options

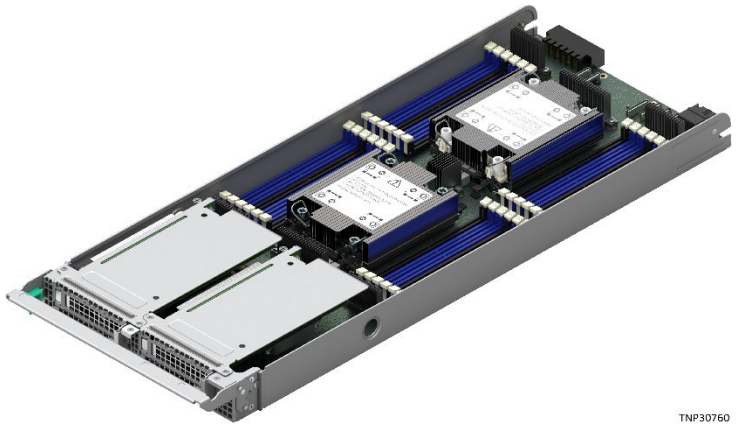
The product tables found in this section provide order code information and detailed descriptions for each available module building block option. The lower sections of each table identify:

- **Included** – The ship along components of the specified chassis product code (product BOM).
- **Required items** – Hardware required to be installed to the base system to achieve basic functionality using the default system feature set. Required items are sold separately.
- **Optional accessories** – Some of the available accessories that can be installed to enhance the basic feature set of the server board/chassis. Optional accessories are sold separately. Additional accessories are in Chapter 3.

Note: Items identified with an iPC (Intel Product Code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table include items identified by description and by iPN (Intel Part Number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 9. Compute Module D50TNP1MHCPAC Specifications

Compute Module D50TNP1MHCPAC
Compute Module 1U half-width Air-Cooled



iPC	D50TNP1MHCPAC
MM#	99A2DZ
UPC	00735858469333
EAN	5032037207904
MOQ	1

Product type	L6 Compute module building block or spare FRU
Form factor	Density-optimized 1U
Packaged gross wt.	12.46 lbs. (5.65 kg)
Un-packaged net wt.	9.39 lbs. (4.26 kg)
Dimensions	591.4 x 216 x 40.6 mm (L x W x H)

Included

(1) – 1U half-width module tray – iPN K53210-xxx
(1)–Intel® Server Board D50TNP – **iPC D50TNP1SB**
(1) – 1U compute module air duct – iPN K61940-xxx
(2) – 1U low-profile PCIe riser card – **iPC TNP1URISER**
(2) – 1U riser bracket to support TNP1URISER – iPN K25206-xxx
(1) – 1U air cooled heat sink front – **iPC TNP1UHSF**
(1) – 1U air cooled heat sink back – **iPC TNP1UHSB**
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(2) – M.2 Heat Sink air cooled – **iPC TNPM2HS**

Required Items (sold separately) – If purchased as building block

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported.

Up to (16) ECC standard DDR4 memory and up to (8) Intel® Optane™ persistent memory 200 series
See Section 1.3 for memory supported.

DIMM Blank – **iPC TNPDMMBLNK**
To populate DIMM slots not populated by memory DIMMs

Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC)–Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 10. Compute Module D50TNP1MHCRAC Specifications

Compute Module D50TNP1MHCRAC
Compute Module 1U half-width Air-Cooled DDR4 Only

iPC	D50TNP1MHCRAC
MM#	99A84D
UPC	00735858469357
EAN	5032037207928
MOQ	1

Product type	L6 Compute module building block or spare FRU
Form factor	Density-optimized 1U
Packaged gross wt.	12.88 lbs. (5.84 kg)
Un-packaged net wt.	9.83 lbs. (4.46 kg)
Dimensions	591.4 x 216 x 40.6 mm (L x W x H)

Included

(1) – 1U half-width module tray – iPN K53210-xxx
(1)–Intel® Server Board D50TNP DDR4 only – **iPC D50TNP1SBCR**
(1) – 1U compute module air duct – iPN K61940-xxx
(2) – 1U low-profile PCIe riser card for D50TNP DDR4 only server board – **iPC TNP1UCRRISER**
(2) – 1U riser bracket to support TNP1UCRRISER – iPN K25206-xxx
(1) – 1U air cooled heat sink front – **iPC TNP1UHSF**
(1) – 1U air cooled heat sink back – **iPC TNP1UHSB**
(4) – DIMM baffles – iPN M19136-xxx
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(2) – M.2 Heat Sink air cooled – **iPC TNPM2HS**

Required Items (sold separately) – If purchased as building block

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported.

Up to (16) ECC standard DDR4 memory
See Section 1.3 for memory supported.

DIMM Blank – **iPC TNPDMMBLNK**
To populate DIMM slots not populated by memory DIMMs

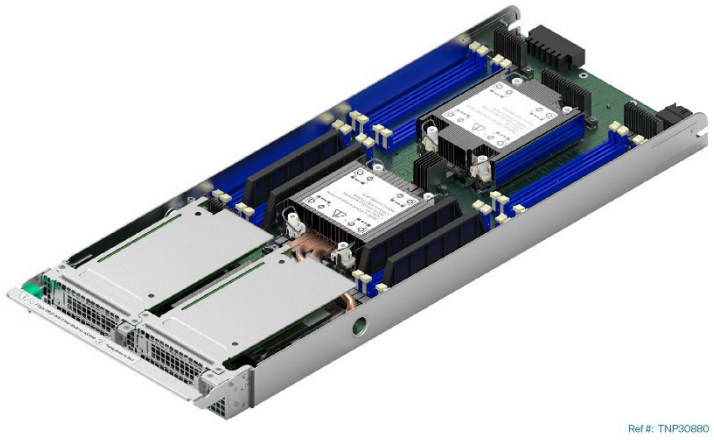
Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 11. Compute Module D50TNP1MHEVAC Specifications

Compute Module D50TNP1MHEVAC
Compute Module 1U half-width EVAC Air-Cooled DDR4 Only



iPC	D50TNP1MHEVAC
MM#	99AG2H
UPC	00735858480413
EAN	5032037217668
MOQ	1

Product type	L6 Compute module building block or spare FRU
Form factor	Density-optimized 1U
Packaged gross wt.	13.38 lbs. (6.07 kg)
Un-packaged net wt.	10.29 lbs. (4.67 kg)
Dimensions	591.4 x 216 x 40.6 mm (L x W x H)

Included

(1) – 1U half-width module tray – iPN K53210-xxx
(1)–Intel® Server Board D50TNP DDR4 only – **iPC D50TNP1SBCR**
(1) – 1U compute module air duct – iPN K61940-xxx
(2) – 1U low-profile PCIe riser card for D50TNP DDR4 only server board – **iPC TNP1UCRRISER**
(2) – 1U riser bracket to support TNP1UCRRISER – iPN K25206-xxx
(1) – 1U air cooled EVAC heat sink – **iPC TNPEVACHS**
(1) – 1U air cooled heat sink back – **iPC TNP1UHSB**
(4) – DIMM baffles – iPN M19136-xxx
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(2) – M.2 Heat Sink air cooled – **iPC TNPM2HS**

Required Items (sold separately) – If purchased as building block

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported

Up to (16) ECC standard DDR4 memory
See Section 1.3 for memory supported.

DIMM Blank – **iPC TNPDMMBLNK**
To populate DIMM slots not populated by memory DIMMs

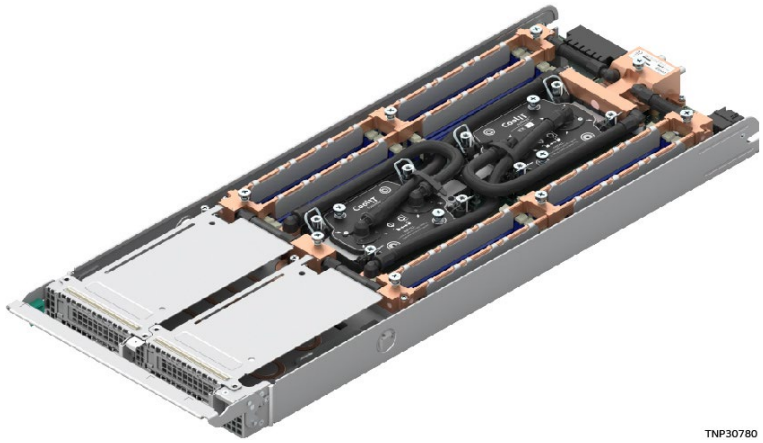
Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 12. Compute Module D50TNP1MHCRLC Specifications

Compute Module D50TNP1MHCRLC
Compute Module 1U half-width Liquid-Cooled DDR4 Only



iPC	D50TNP1MHCRLC
MM#	99A84F
UPC	00735858469364
EAN	5032037207935
MOQ	1

Product type	L6 Compute module building block or spare FRU
Form factor	Density-optimized 1U
Packaged gross wt.	18.80 lbs. (8.53 kg)
Un-packaged net wt.	15.76 lbs. (7.15 kg)
Dimensions	591.4 x 216 x 40.6 mm (L x W x H)

Included

(1) – 1U half-width module tray – iPN K53210-xxx
(1)–Intel® Server Board D50TNP DDR4 only – **iPC D50TNP1SBCR**
(2) – 1U low-profile PCIe riser card for D50TNP DDR4 only server board – **iPC TNP1UCRRISER**
(2) – 1U riser bracket to support TNP1UCRRISER – iPN K25206-xxx
(1) – DIMM latch tool for liquid cooled module – **iPC TNPDMMLTHTL**
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(1) – Liquid cooling loop – **iPC TNPLCLPCM**, which includes 8 pcs of DIMM clips – **iPC FXXWKLCDMCLP**

Required Items (sold separately) – If purchased as building block

(2) – M.2 heat sink liquid cooled – **iPC TNPM2HSLC**

(2) – 3rd Gen Intel® Xeon® processor Scalable family
See Section 1.2 for processors supported

Up to (16) ECC standard DDR4 memory.
See Section 1.3 for memory supported.

(1) – Liquid-cooling VR TIMM application tools – **iPC TNPLCVRTLS**
(1) – Liquid-cooling VR TIMM application nozzle – **iPC TNPLCVRTNZ**
(1) – Liquid-cooling VR TIMM compound – **iPC TNPLCVRCMPD**

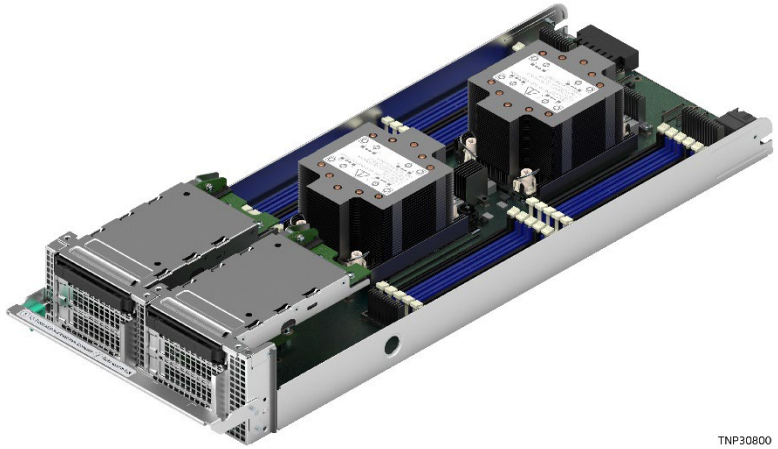
Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 13. Management Module D50TNP2MHSVAC Specifications

Management Module D50TNP2MHSVAC
Management Module 2U half-width Air-Cooled



iPC	D50TNP2MHSVAC
MM#	99A2F1
UPC	00735858469371
EAN	5032037207942
MOQ	1

Product type	L6 Management Module building block or spare FRU
Form factor	Density-optimized 2U
Packaged gross wt.	15.65 lbs. (7.10 kg)
Un-packaged net wt.	11.77 lbs. (5.34 kg)
Dimensions	591.4 x 216 x 82 mm (L x W x H)

Included

(1) – 2U half-width module tray – iPN K53211-xxx
(1)–Intel® Server Board D50TNP – **iPC D50TNP1SB**
(1) – 2U Management Module air duct – iPN K61939-xxx
(2) – 2U low-profile PCIe* riser card – **iPC TNP2URISER**, with U.2 PCIe* NVMe* SSD adapter card included
(2) – 2U riser bracket to support TNP2URISER – iPN 25207-xxx
(1) – 2U air cooled heat sink front – **iPC TNP2UHSF**
(1) – 2U air cooled heat sink back – **iPC TNP2UHSB**
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(2) – M.2 heat sink air cooled – **iPC TNPM2HS**
(2) – 2.5" tool-less SSD drive carrier – iPN J36439-xxx

Required Items (sold separately) – If purchased as building block

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported

Up to (16) ECC standard DDR4 memory and up to (8) Intel® Optane™ persistent memory 200 series
See Section 1.3 for memory supported.

DIMM Blank – **iPC TNPDMMBLNK**
To populate DIMM slots not populated by memory DIMMs

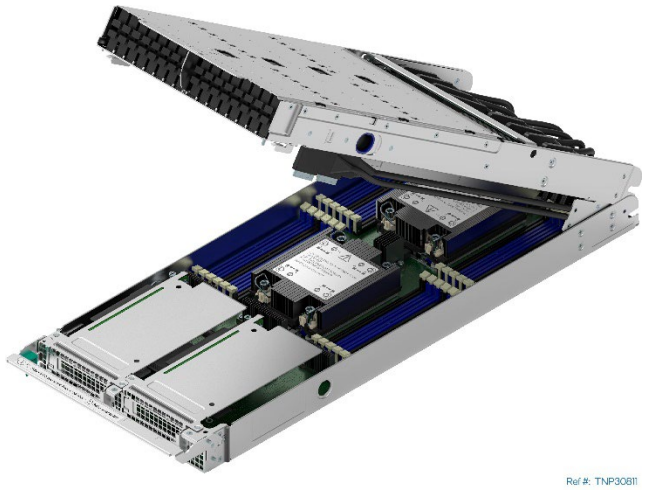
Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 14. Storage Module D50TNP2MHSTAC Specifications

Storage Module D50TNP2MHSTAC
Storage Module 2U half-width Air-Cooled



iPC	D50TNP2MHSTAC
MM#	99A27J
UPC	00735858469388
EAN	5032037207959
MOQ	1

Product type	L6 Storage Module building block or spare FRU
Form factor	Density-optimized 2U
Packaged gross wt.	20.94 lbs. (9.50 kg)
Un-packaged net wt.	17.00 lbs. (7.71 kg)
Dimensions	591.4 x 216 x 82 mm (L x W x H)

Included

(1) – 2U half-width module tray – iPN K74857-xxx
(1)–Intel® Server Board D50TNP – **iPC D50TNP1SB**
(1) – 1U Storage Module air duct right – iPN K88592-xxx
(1) – 1U Storage Module air duct left – iPN K88590-xxx
(2) – 1U low-profile PCIe* riser card – **iPC TNP1URISER**
(2) – 1U riser bracket to support TNP1URISER – iPN K25206-xxx
(2) – M.2 heat sink air cooled – **iPC TNPM2HS**
(1) – 1U air cooled heat sink front – **iPC TNP1UHSF**
(1) – 1U air cooled heat sink back – **iPC TNP1UHSB**
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(1) – Storage Module docking board – **iPC TNPSTDCKBRD**
(2) – OCuLink cable 520 mm – iPN K73563-xxx
(2) – OCuLink cable 125 mm – iPN K73567-xxx
(2) – OCuLink cable 145 mm – iPN K73568-xxx
(2) – OCuLink cable 140 mm – iPN K73570-xxx
(1 each) – OCuLink connector covers for J25, J26, J29, and J30 – iPN K74231-xxx
(1 each) – OCuLink connector covers for J27 and J28 – iPN K74230-xxx

Required Items (sold separately) – If purchased as building block

Storage Module ruler blank – **iPC TNPRLRBLNK**
Kit includes 4 pieces per pack

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported

Up to (16) ECC standard DDR4 memory and up to (8) Intel® Optane™ persistent memory 200 series
See Section 1.3 for memory supported.

DIMM Blank – **iPC TNPDMMBLNK**
To populate DIMM slots not populated by memory DIMMs

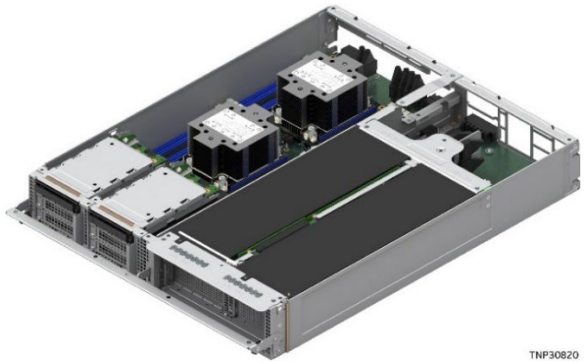
Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD** **OR**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Premium Model Key–iPC **VROCPREMMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Table 15. Compute Module D50TNP2MFALAC Specifications

Accelerator Module D50TNP2MFALAC
Accelerator Module 2U Full-Width Air-Cooled



iPC	D50TNP2MFALAC
MM#	99A2F4
UPC	00735858469395
EAN	5032037207966
MOQ	1

Product type	L6 Accelerator Module building block or spare FRU
Form factor	Density-optimized 2U
Packaged gross wt.	33.71 lbs. (15.29 kg)
Un-packaged net wt.	19.80 lbs. (8.98 kg)
Dimensions	591.25 x 437.1 x 82 mm (L x W x H)

Included

(1) – 2U full-width module tray – iPN K85397-xxx
(1)–Intel® Server Board D50TNP – **iPC D50TNP1SB**
(1) – 2U Accelerator Module air duct – iPN K85780-xxx
(2) – 2U low-profile PCIe* riser card – **iPC TNP2URISER**, with U.2 PCIe* NVMe* SSD adapter card included
(2) – 2U riser bracket to support TNP2URISER – iPN K25207-xxx
(2) – 2.5" tool-less SSD drive carrier – iPN J36439-xxx
(2) – M.2 heat sink air cooled – **iPC TNPM2HS**
(1) – 2U air cooled heat sink front – **iPC TNP2UHSF**
(1) – 2U air cooled heat sink back – **iPC TNP2UHSB**
(2) – Processor carrier clip, for 3rd Gen Intel® Xeon® Scalable processor family supported by the Intel® Server D50TNP Family – iPN J98484-xxx
(1) – 2U full height, full length, double width PCIe* riser card 1 – **iPC TNPACCLRISER1**
(1) – 2U full height, full length, double width PCIe* riser card 2 – **iPC TNPACCLRISER2**
(1) – Accelerator Module power connector board – **iPC TNPACCLNBRD**
(2) – Power cable 110 mm to connect TNPACCLRISER1 and TNPACCLRISER 2 to TNPACCLNBRD – iPN K73519-xxx
(1 each) – OCuLink cable 740 mm and 710 mm – iPN K87949-xxx
(2) – OCuLink cable 260 mm – iPN K87954-xxx
(2 each) – OCuLink cable 370 mm and 340 mm – iPN K88047-xxx
(1 each) – OCuLink connector covers for J25, J26, J29, and J30 – iPN K74231-xxx
(1 each) – OCuLink connector covers for J27 and J28 – iPN K74230-xxx

Required Items (sold separately) – If purchased as building block

(1) –Accelerator Module card kit A100 – **iPC TNPACCLBZA100**
(1) – Accelerator Module card kit DC – **iPC TNPACCLBZDC**
(1) – Accelerator Module card kit V100 – **iPC TNPACCLBZV100**

Note: Each accelerator card kit must be ordered one per accelerator add-in card. The type of accelerator card kit depends on the model of accelerator add-in card being used.

(2) – 3rd Gen Intel® Xeon® Scalable processor family
See Section 1.2 for processors supported.
Up to (16) ECC standard DDR4 memory and up to (8) Intel® Optane™ persistent memory 200 series
See Section 1.3 for memory supported.
DIMM Blank – **iPC TNPDMMBLNK** To populate DIMM slots not populated by memory DIMMs

Optional Accessories (sold separately) – If purchased as building block

(1) – I/O breakout cable – **iPC AXXCONNTDBG**
(1)–Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key–iPC **VROCSTANMOD**
(1)–Intel® Trusted Platform Module (TPM) 2.0–iPC **AXXTPMENC8** **OR**
(1)–Intel® Trusted Platform Module (TPM) 2.0 China version–iPC **AXXTPMCHNE8**

See Chapter 3 for all available accessory options.

Note: Accelerator Module D50TNP2MFALAC supports up to four accelerator add-in cards of the same type. Mixed types in a single module are not supported. See the *Intel® Server D50TNP Family Technical Product Specification* for detailed information on the support for accelerator add-in cards.

2.3 Intel® Server Chassis FC2000 Options

The product tables found in this section provide order code information and detailed descriptions for each available chassis option. The parts listed as included are ship along components in the product BOM.

For optional accessories, see Chapter 3.

Note: Items identified with an iPC (Intel Product Code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table include items identified by description and by iPN (Intel Part Number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 16. Intel® Server Chassis FC2HLC21W3 Specifications

Intel® Server Chassis FC2HLC21W3
Intel® Server Chassis FC2000 half-width Configuration Liquid-Cooled (2100W)

iPC	FC2HLC21W3
MM#	999D3Z
UPC	00735858425957
EAN	5032037168151
MOQ	1

Product type	Chassis building block for Intel® Server System D50TNP or spare FRU
Chassis form factor	2U rack mount
Packaged gross wt.	66.49 lbs. (30.16 kg)
Un-packaged net wt.	42.24 lbs. (19.16 kg)
Chassis dimensions	865 x 441.8 x 86.8 mm (L x W x H)
Package dimensions	1192 x 758 x 317 mm (L x W x H)

Included	**Required Items (sold separately) – If purchased as building block**	**Optional Accessories (sold separately) – If purchased as building block**
(1) – 2U chassis (1) – Chassis plumbing assembly kit – **iPC FCXXLCMANFLD** (2) – Liquid cooling quick disconnect filler (3) – Fan assembly with integrated dual rotor 60mm fan – **iPC FCXX60MMFAN** (1) – Power distribution board assembly – **iPC FCXXPDBASSMBL** (3) – 2100 W 80 PLUS* Platinum power supply units – **iPC FCXX2100CRPS** (1) – Tool less rack rail mount kit – **iPC FCXXRAILKIT** (1) – EMP module filler	Intel® D50TNP Modules See Section 1.6 for Intel® D50TNP Modules supported by this chassis.	(1) – Ethernet Management Port Module – **iPC AXXFCEMP** See Chapter 3 for all available accessory options.

Table 17. Intel® Server Chassis FC2HAC21W3 Specifications

Intel® Server Chassis FC2HAC21W3
Intel® Server Chassis FC2000 half-width Configuration Air-Cooled (2100W)

iPC	FC2HAC21W3
MM#	999MVK
UPC	00735858431736
EAN	5032037173728
MOQ	1

Product type	Chassis building block for Intel® Server System D50TNP or spare FRU
Chassis form factor	2U rack mount
Packaged gross wt.	74.82 lbs. (33.94 kg)
Un-packaged net wt.	50.57 lbs. (22.94 kg)
Chassis dimensions	865 x 441.8 x 86.8 mm (L x W x H)
Package dimensions	1192 x 758 x 317 mm (L x W x H)

Included	**Required Items (sold separately) – If purchased as building block**	**Optional Accessories (sold separately) – If purchased as building block**
(1) – 2U chassis (3) – Fan assembly with integrated dual rotor 60mm fan – **iPC FCXX60MMFAN** (2) – Fan assembly with integrated dual rotor 80mm fan – **iPC FCXX80MMFAN** (1) – Power distribution board assembly – **iPC FCXXPDBASSMBL** (3) – 2100 W 80 PLUS* Titanium power supply units – **iPC FCXX2100CRPS** (1) – Tool less rack rail mount kit – **iPC FCXXRAILKIT** (1) – EMP module filler	Intel® Server D50TNP Modules See Section 1.6 for Intel® D50TNP Modules supported by this chassis.	(1) – Ethernet Management Port Module – **iPC AXXFCEMP** See Chapter 3 for all available accessory options.

Table 18. Intel® Server Chassis FC2HAC16W3 Specifications

Intel® Server Chassis FC2HAC16W3
Intel® Server Chassis FC2000 half-width Configuration Air-Cooled (1600W)

iPC	FC2HAC16W3
MM#	999D40
UPC	00735858425964
EAN	5032037168168
MOQ	1

Product type	Chassis building block for Intel® Server System D50TNP or spare FRU
Chassis form factor	2U rack mount
Packaged gross wt.	74.82 lbs. (33.94 kg)
Un-packaged net wt.	50.57 lbs. (22.94 kg)
Chassis dimensions	865 x 441.8 x 86.8 mm (L x W x H)
Package dimensions	1192 x 758 x 317 mm (L x W x H)

Included

(1) – 2U chassis
(3) – Fan assembly with integrated dual rotor 60mm fan – **iPC FCXX60MMFAN**
(2) – Fan assembly with integrated dual rotor 80mm fan – **iPC FCXX80MMFAN**
(1) – Power distribution board assembly – **iPC FCXXPDBASSMBL**
(3) – 1600 W 80 PLUS* Titanium power supply units – **iPC AXX1600TCRPS**
(1) – Tool less rack rail mount kit – **iPC FCXXRAILKIT**
(1) – EMP module filler

Required Items (sold separately) – If purchased as building block

Intel® Server D50TNP Modules

See Section 1.6 for Intel® Server D50TNP Modules supported by this chassis.

Optional Accessories (sold separately) – If purchased as building block

(1) – Ethernet Management Port Module – **iPC AXXFCEMP**

See Chapter 3 for all available accessory options.

Table 19. Intel® Server Chassis FC2FAC16W3 Specifications

Intel® Server Chassis FC2FAC16W3
Intel® Server Chassis FC2000 Full-Width Configuration Air-Cooled (1600W)

iPC	FC2FAC16W3
MM#	99A0RR
UPC	00735858469401
EAN	5032037207973
MOQ	1

Product type	Chassis building block for Intel® Server System D50TNP or spare FRU
Chassis form factor	2U rack mount
Packaged gross wt.	74.82 lbs. (33.94 kg)
Un-packaged net wt.	50.57 lbs. (22.94 kg)
Chassis dimensions	865 x 441.8 x 86.8 mm (L x W x H)
Package dimensions	1192 x 758 x 317 mm (L x W x H)

Included	**Required Items (sold separately) – If purchased as building block**	**Optional Accessories (sold separately) – If purchased as building block**
(1) – 2U chassis (3) – Fan assembly with integrated dual rotor 60mm fan – **iPC FCXX60MMFAN** (2) – Fan assembly with integrated dual rotor 80mm fan – **iPC FCXX80MMFAN** (1) – Power distribution board assembly – iPN M42428-404 (3) – 1600 W 80 PLUS* Titanium power supply units – **iPC AXX1600TCRPS** (1) – Tool less rack rail mount kit – **iPC FCXXRAILKIT** (1) – EMP module filler	Intel® Server D50TNP Modules See Section 1.6 for Intel® Server D50TNP Modules supported by this chassis.	(1) – Ethernet Management Port Module – **iPC AXXFCEMP** See Chapter 3 for all available accessory options.

3. Accessory Options

The following sections identify available accessory kits supported in the Intel® Server D50TNP Family.

Table 20. Miscellaneous Accessory Options

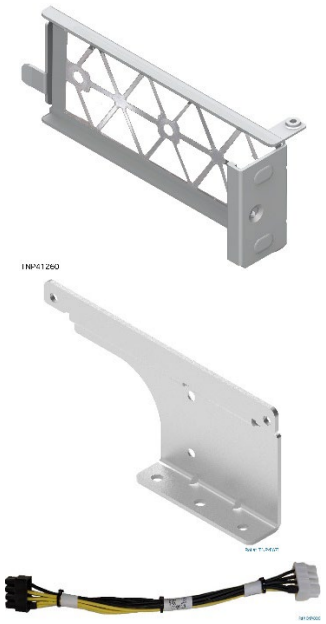
Image	Details	Description
	**Accelerator Module Card Kit DC** **iPC** TNPACCLBZDC **MM#** 99A2AR **UPC** 00735858469425 **EAN** 5032037207997 **MOQ** 1 **Product type** Accessory kit	Supports Programmable Acceleration Card with Intel® Stratix® 10 SX FPGA add-in card for Accelerator Module 2U Full-Width Air-Cooled. **Kit includes:** (1) – Front metal bracket – iPN K85872-xxx (1) – Power cable – iPN K73545-xxx, used to connect the add-in card to the Accelerator Module connector board. Each accelerator card kit DC can only support one Intel® Stratix® 10 SX FPGA accelerator add-in card. The kit must be ordered one per card.
	**Accelerator Module Card Kit V100** **iPC** TNPACCLBZV100 **MM#** 99A2HZ **UPC** 00735858469432 **EAN** 5032037208000 **MOQ** 1 **Product type** Accessory kit	Supports Nvidia* Tesla* V100 accelerator add-in card for Accelerator Module 2U Full-Width Air-Cooled. **Kit includes:** (1) – Front metal bracket – iPN K85408-xxx (1) – Rear extension bracket – iPN K86006-xxx (1) – Power cable – iPN K73520-xxx, used to connect the add-in card to the Accelerator Module connector board. Each accelerator card kit V100 can only support one Nvidia* Tesla* V100 accelerator add-in card. The kit must be ordered one per card.

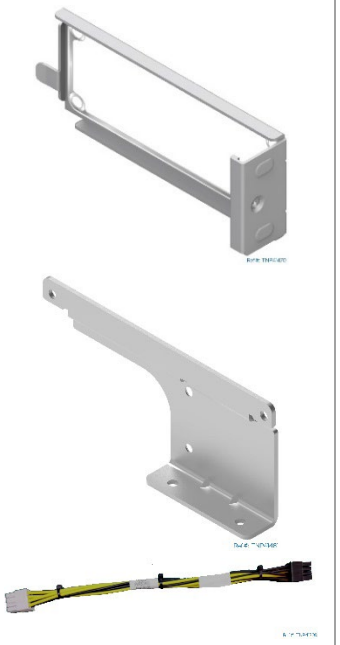
Image	Details	Description
	**Accelerator Module Card Kit A100** **iPC** TNPACCLBZA100 **MM#** 99AJJC **UPC** 00735858484893 **EAN** 5032037221658 **MOQ** 1 **Product type** Accessory kit	Supports Nvidia* Tesla* A100-40/80 GB accelerator add-in cards for Accelerator Module 2U Full-Width Air-Cooled **Kit includes:** (1) – Front metal bracket – iPN M33267-xxx (1) – Rear extension bracket – iPN M33268-xxx (1) – Power cable – iPN M44106-xxx, used to connect the add-in card to the Accelerator Module connector board. Each accelerator card kit A100 can only support one Nvidia* Tesla* A100-40/80 GB accelerator add-in card. The kit must be ordered one per card.
	**Liquid Cooling VR TIMM Application Tools** **iPC** TNPLCVRTLS **MM#** 99AAKL **UPC** 00735858474306 **EAN** 5032037212298 **MOQ** 1 **Product type** Accessory kit	To be used only for front voltage regulator thermal interface material on liquid-cooled modules. See the *Intel® Server D50TNP Family Integration and Service Guide* for installation, replacement, and usage instructions.
	**Liquid Cooling VR TIMM Application Nozzles** **iPC** TNPLCVRTNZ **MM#** 99AF47 **UPC** 00735858476263 **EAN** 5032037214148 **MOQ** 1 **Product type** Accessory kit	To be used only for front voltage regulator thermal interface material on Intel® D50TNP liquid-cooled modules. See the *Intel® Server D50TNP Integration and Service Guide* for installation, replacement, and usage instructions.

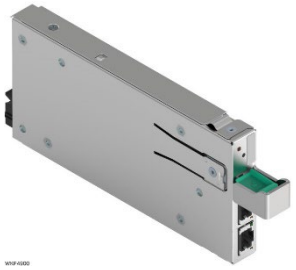
Image	Details	Description
	**Liquid Cooling VR TIMM Compound** **iPC** TNPLCVRCMPD **MM#** 99AAKM **UPC** 00735858474313 **EAN** 5032037212304 **MOQ** 1 **Product type** Accessory kit	To be used only for front voltage regulator thermal interface material on Intel® D50TNP liquid-cooled modules. See the *Intel® Server D50TNP Family Integration and Service Guide* for installation, replacement, and usage instructions.
	**M.2 Heat Sink Liquid Cooled Assembly** **iPC** TNPM2HSLC **MM#** 99A5Z9 **UPC** 00735858469586 **EAN** 5032037208154 **MOQ** 1 **Product type** Accessory kit	M.2 heat sink spare kit for liquid-cooled modules. Compatible with TNP 1U riser and TNP 1U CR riser. **Kit includes:** (1) – M.2 heat sink and screw (1) – M.2 Thermal Interface Material
	**I/O breakout cable** **iPC** AXXCONNTDBG **MM#** 999D47 **UPC** 00735858424349 **EAN** 5032037166638 **MOQ** 1 **Product type** Accessory kit	I/O breakout cable connector kit, compatible with all Intel® D50TNP Module options. Supports the following ports: (1) – serial port (1) – video port (2) – USB 3.0 and 2.0 ports
	**Ethernet Management Port Module** **iPC** AXXFCEMP **MM#** 999D48 **UPC** 00735858425988 **EAN** 5032037168182 **MOQ** 1 **Product type** Accessory kit	Ethernet management port (EMP) module accessory kit, compatible with all Intel® D50TNP chassis options. • Offers two RJ45 ports for management of compute modules and system over 1Gbps Ethernet • Port forwarding • Hot-swappable • Access to all present BMCs in the system with only one RJ45 cable • Daisy-chain capability to access multiple systems with one Ethernet connection

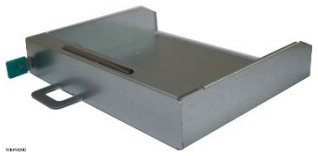
Image	Details	Description
	**1U Compute Module Blank** **iPC** AXXFC1UBLANK **MM#** 999D49 **UPC** 00735858425995 **EAN** 5032037168199 **MOQ** 1 **Product type** Accessory kit	1U module blank for the Intel® Server Chassis FC200 family.
	**Intel® Virtual RAID on CPU (Intel® VROC) – Standard Model Key** **iPC** VROCSTANMOD **MM#** 951605 **UPC** 00735858337243 **EAN** 5032037100007 **MOQ** 5 **Product type** Accessory kit	Activation key to support Intel and non-Intel NVMe* SSDs and enable RAID (0, 1, 10) functionality.
	**Intel® Virtual RAID on CPU (Intel® VROC) – Premium Model Key** **iPC** VROCPREMMOD **MM#** 951606 **UPC** 00735858337267 **EAN** 5032037100014 **MOQ** 5 **Product type** Accessory kit	Activation key to support Intel and non-Intel NVMe* SSDs and enable RAID (0, 1, 5, 10) functionality.

Image	Details	Description
	Intel® Trusted Platform Module (TPM) 2.0 iPC AXXTPMENC8 MM# 955867 UPC 00735858345712 EAN 5032037106207 MOQ 1 Product type Accessory kit	A TPM is a hardware-based security device that addresses the growing concern on boot process integrity and offers better data protection. TPM protects the system start-up process by ensuring it is tamper-free before releasing system control to the operating system. A TPM device provides secured storage to store data, such as security keys and passwords. In addition, a TPM device has encryption and hash functions. AXXTPMENC8 implements TPM as per TPM PC Client specifications revision 2.0 by the Trusted Computing Group (TCG) This part is no longer available to order; refer to replacement part MM# 99C69H. AXXTPMENC9 has improvements in provisioning support.
	**Intel® Trusted Platform Module (TPM) 2.0** **iPC** AXXTPMENC9 **MM#** 99C69H **UPC** 00735858527378 **EAN** 5032037259385 **MOQ** 1 **Product type** Accessory kit	A TPM is a hardware-based security device that addresses the growing concern on boot process integrity and offers better data protection. TPM protects the system start-up process by ensuring it is tamper-free before releasing system control to the operating system. A TPM device provides secured storage to store data, such as security keys and passwords. In addition, a TPM device has encryption and hash functions. AXXTPMENC9 implements TPM as per TPM PC Client specifications revision 2.0 by the Trusted Computing Group (TCG)
	**Intel® Trusted Platform Module (TPM) 2.0** **iPC** AXXTPMCHNE8 **MM#** 960608 **UPC** 00735858347341 **EAN** 5032037107068 **MOQ** 1 **Product type** Accessory kit	**Note**: AXXTPMCHNE8 compatible for use in China. A TPM is a hardware-based security device that addresses the growing concern on boot process integrity and offers better data protection. TPM protects the system start-up process by ensuring it is tamper-free before releasing system control to the operating system. A TPM device provides secured storage to store data, such as security keys and passwords. In addition, a TPM device has encryption and hash functions. AXXTPMCHNE8 implements TPM as per TPM PC Client specifications revision 2.0 by the Trusted Computing Group (TCG)
	Advanced System Management Key **iPC** ADVSYSMGMTKEY **MM#** 99AJX5 **UPC** N/A **EAN** N/A **MOQ** 1 **Product type** Accessory kit	Software electronic key to be uploaded to the BMC **Note:** Needed to enable advance system management features on Integrated BMC Web Console. For more information, see the *Intel® Server D50TNP Family Technical Product Specification*.

4. Spare and Replacement Parts (FRUs)

System integrators and distributors may choose to hold additional stock of individual system components. Intel makes available the following spare and replacement parts (FRUs) compatible with the specified Intel® server family.

Table 21. Spare and Replacement Parts

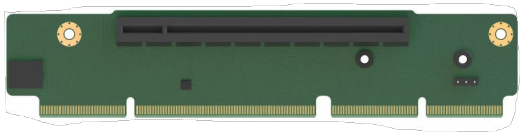
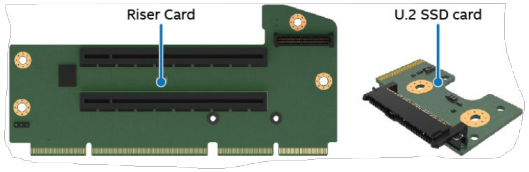
Image	Details	Description
	**1U PCIe* x16 Riser Card for Low-Profile PCIe* Card and M.2 Device** **iPC** TNP1URISER **MM#** 99A2GL **UPC** 00735858469449 **EAN** 5032037208017 **MOQ** 1 **Product type** Spare FRU	Riser card option to be used on the following modules: • Compute Module 1U half-width Air-Cooled • Storage Module 2U half-width Air-Cooled Support for one low-profile PCIe* add-in card on the right side and one SATA/PCIe* 80/110 mm M.2 device on the left side. **Kit includes:** (1) – Riser card (1) – M.2 standoff and screw
	**2U PCIe* x16 Riser Card for Low-Profile PCIe* Card and M.2 Device** **iPC** TNP2URISER **MM#** 99A2GM **UPC** 00735858469456 **EAN** 5032037208024 **MOQ** 1 **Product type** Spare FRU	Riser card option to be used on the following modules: • Management Module 2U half-width Air-Cooled • Accelerator Module 2U Full-Width Air-Cooled. Support for (2) low-profile PCIe* add-in cards and (1) U.2 PCIe NVMe* SSD on the right side, and one SATA/PCIe* 80/110 mm M.2 device on the left side. **Kit includes:** (1) – 2U riser card (1) – U.2 PCIe* NVMe* SSD adapter card (1) – M.2 standoff and screw

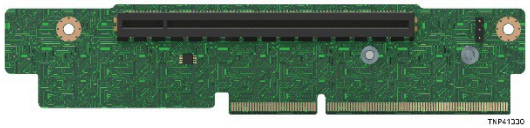
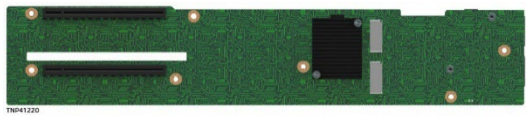
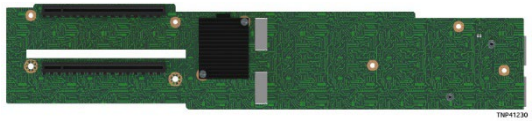
Image	Details	Description
	**1U PCIe* x16 Riser Card for Low-Profile PCIe* Card and M.2 Device.** **iPC** TNP1UCRRISER **MM#** 99AF4H **UPC** 00735858476270 **EAN** 5032037214155 **MOQ** 1 **Product type** Spare FRU	Riser card option to be used on the following modules: • Compute Module 1U half-width Air-Cooled DDR4 Only • Compute Module 1U half-width EVAC Air-Cooled DDR4 Only • Compute Module 1U half-width Liquid-Cooled DDR4 Only. Support for one low-profile PCIe* add-in card on the right side and one SATA/PCIe* 80/110 mm M.2 device on the left side. **Kit includes:** (1) –Riser card (1) – M.2 standoff and screw
	**Accelerator Module Riser Card 1** **iPC** TNPACCLRISER1 **MM#** 99A2GK **UPC** 00735858469463 **EAN** 5032037208031 **MOQ** 1 **Product type** Spare FRU	Riser card option for Accelerator Module 2U Full-Width Air-Cooled. Support for (2) full height, full length, double width PCIe* add-in cards for acceleration solutions. **Kit includes:** (1) – Accelerator Module Riser Card 1
	**Accelerator Module Riser Card 2** **iPC** TNPACCLRISER2 **MM#** 99A2GN **UPC** 00735858469470 **EAN** 5032037208048 **MOQ** 1 **Product type** Spare FRU	Riser card option for Accelerator Module 2U Full-Width Air-Cooled. Support for (2) full height, full length, double width PCIe* add-in cards for acceleration solutions. **Kit includes:** (1) – Accelerator Module Riser Card 2

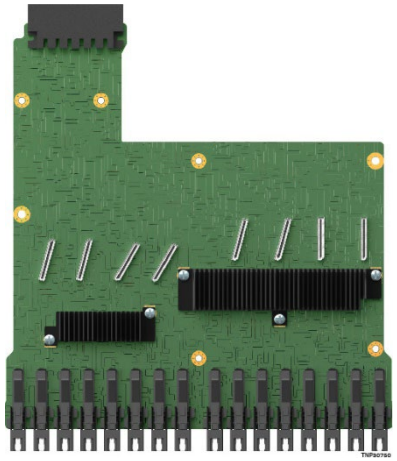
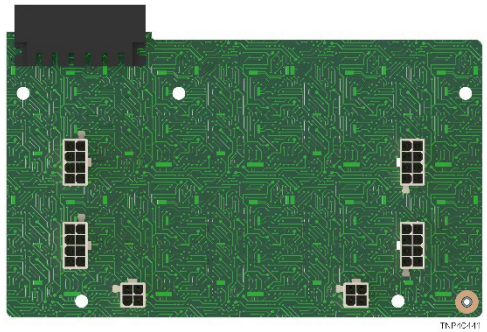
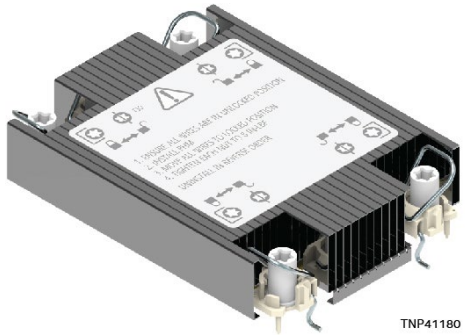
Image	Details	Description
	**Storage Module Docking Board** **iPC** TNPSTDCKBRD **MM#** 99A2F7 **UPC** 00735858469487 **EAN** 5032037208055 **MOQ** 1 **Product type** Spare FRU	Docking board for Storage Module 2U half-width Air-Cooled. **Note:** Heat sinks shown on the image are included but not installed on the docking board.
	**Accelerator Module Connector Board** **iPC** TNPACCLCNBRD **MM#** 99A2F8 **UPC** 00735858469494 **EAN** 5032037208062 **MOQ** 1 **Product type** Spare FRU	Power connector board for Accelerator Module 2U Full-Width Air-Cooled.
	**1U Air-Cooled Heat Sink Front** **iPC** TNP1UHSF **MM#** 99A2F9 **UPC** 00735858469500 **EAN** 5032037208079 **MOQ** 1 **Product type** Spare FRU	Standard heat sink, front position. To be used on the following modules: • Compute Module 1U half-width Air-Cooled • Compute Module 1U half-width Air-Cooled DDR4 Only • Storage Module 2U half-width Air-Cooled

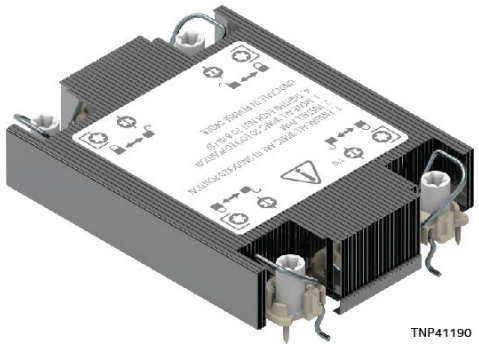
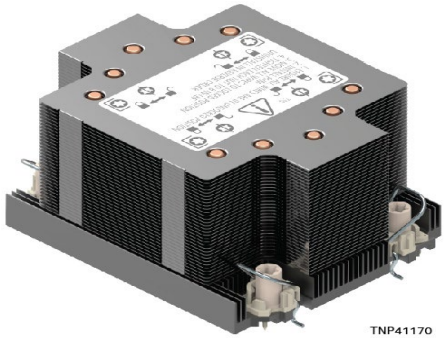
Image	Details	Description
	**1U Air-Cooled Heat Sink Rear** **iPC** TNP1UHSB **MM#** 99A2FA **UPC** 00735858469517 **EAN** 5032037208086 **MOQ** 1 **Product type** Spare FRU	Standard heat sink, rear position. To be used on the following modules: • Compute Module 1U half-width Air-Cooled • Compute Module 1U half-width Air-Cooled DDR4 Only • Compute Module 1U half-width EVAC Air-Cooled DDR4 Only • Storage Module 2U half-width Air-Cooled
	**2U Air-Cooled Heat Sink Front** **iPC** TNP2UHSF **MM#** 99A27K **UPC** 00735858469524 **EAN** 5032037208093 **MOQ** 1 **Product type** Spare FRU	Standard heat sink, front position. To be used on the following modules: • Management Module 2U half-width Air-Cooled • Accelerator Module 2U Full-Width Air-Cooled
	**2U Air-Cooled Heat Sink Rear** **iPC** TNP2UHSB **MM#** 99A2F5 **UPC** 00735858469531 **EAN** 5032037208109 **MOQ** 1 **Product type** Spare FRU	Standard heat sink, rear position. To be used on the following modules: • Management Module 2U half-width Air-Cooled • Accelerator Module 2U Full-Width Air-Cooled

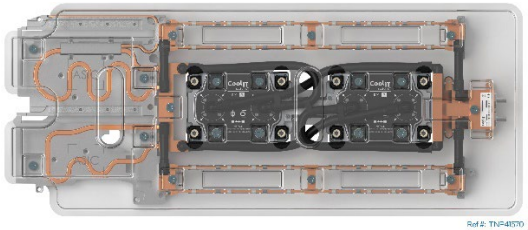
Image	Details	Description
	**Compute Module Primary Liquid-Cooling Loop** **iPC** TNPLCLPCM **MM#** 99A2GC **UPC** 00735858469548 **EAN** 5032037208116 **MOQ** 1 **Product type** Spare FRU	Liquid Cooling loop spare kit for 1U liquid-cooled modules **Kit includes:** (1) – liquid cooling loop with plastic carrier for installation/removal (2) – Front voltage regulator blocks (8) – DIMM retention clips – **iPC FXXWKLCDMCLP**
	**M.2 Heat Sink Air Cooled Assembly** **iPC** TNPM2HS **MM#** 99A2GA **UPC** 00735858469579 **EAN** 5032037208147 **MOQ** 1 **Product type** Spare FRU	M.2 heat sink spare kit for air-cooled modules. Compatible with TNP 1U riser, TNP 1U CR riser, and TNP 2U riser **Kit includes:** (1) – M.2 heat sink and screw
	**DIMM Blank** **iPC** TNPDMMBLNK **MM#** 99A5ZC **UPC** 00735858469593 **EAN** 5032037208161 **MOQ** 1 **Product type** Spare FRU	Compatible with all module options. **Kit includes:** (8) – Blanks per pack In modules that have defined airflow pattern requirements, it may be necessary to install a DIMM blank when no DIMM is desired within a memory slot that must be populated.

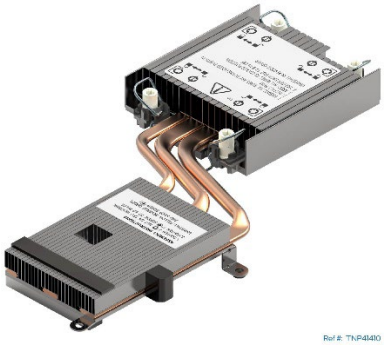
Image	Details	Description
	**Ruler Blank** **iPC** TNPRLRBLNK **MM#** 99AF4C **UPC** 00735858476287 **EAN** 5032037214162 **MOQ** 1 **Product type** Spare FRU	To be used on Storage Module 2U half-width Air-Cooled. **Kit includes:** (4) – Blanks per pack
	**Liquid-Cooling DIMM Latch Tool** **iPC** TNPDMMLTHTL **MM#** 99AF4D **UPC** 00735858476294 **EAN** 5032037214179 **MOQ** 1 **Product type** Spare FRU	DIMM latch tool for memory removal on the liquid cooled modules. **Kit includes:** (2) – Tools
	**1U EVAC Heat Sink** **iPC** TNPEVACHS **MM#** 99AFFM **UPC** 00735858480420 **EAN** 5032037217675 **MOQ** 1 **Product type** Spare FRU	EVAC heat sink available only for front position. To be used on the following module: • Compute Module 1U half-width EVAC Air-Cooled DDR4 Only

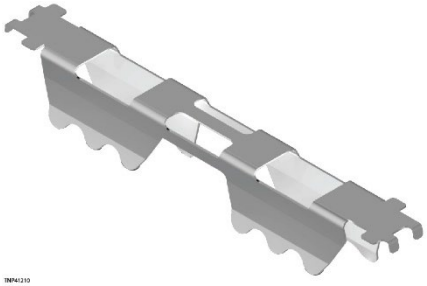
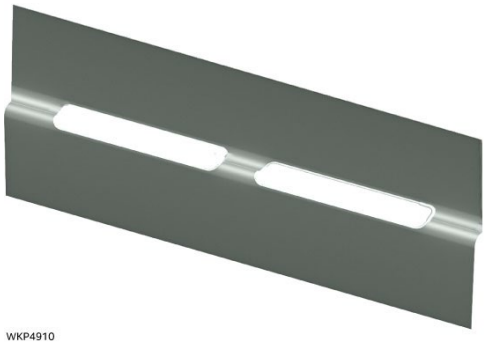
Image	Details	Description
	**DIMM Retention Clip** **iPC** FXXWKLCDMCLP **MM#** 999D46 **UPC** 00735858426060 **EAN** 5032037168267 **MOQ** 1 **Product type** Spare FRU	DIMM retention clip spare for use with liquid cooled modules.
	**Thermal Interface Material Spare Kit for Liquid Cooling Loop** **iPC** TNPLCDMTM **MM#** 99AFM7 **UPC** 00735858479226 **EAN** 5032037216562 **MOQ** 1 **Product type** Spare FRU	Thermal interface material spare kit. To be installed in memory cooling assemblies in the liquid cooling loop. **Kit includes:** (4) – Pieces of TIM material.
	**2100 W Common Redundant Power Supply** **iPC** FCXX2100CRPS **MM#** 999D4L **UPC** 00735858424592 **EAN** 5032037166829 **MOQ** 1 **Product type** Spare FRU	2100 W AC common redundant power supply, 80 PLUS* Platinum efficiency.

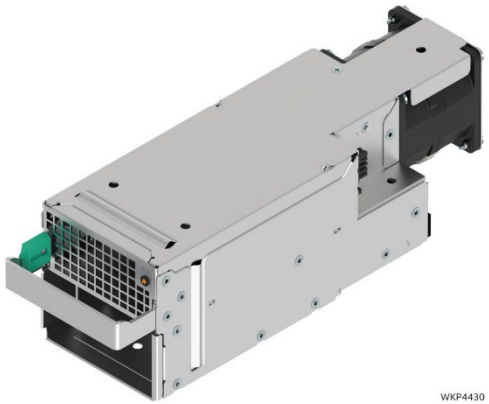
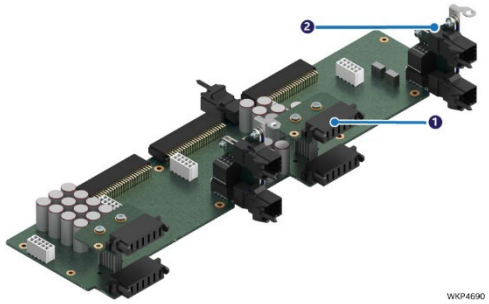
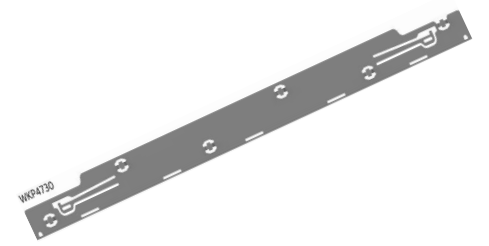
Image	Details	Description
 WKP4050	**1600 W Common Redundant Power Supply** **iPC** AXX1600TCRPS **MM#** 99ADF2 **UPC** 00735858407038 **EAN** 5032037151245 **MOQ** 1 **Product type** Spare FRU	1600 W AC common redundant power supply, 80 PLUS* Titanium efficiency.
 WKP4430	**Spare Fan Assembly with Integrated Dual Rotor 60 mm Fan** **iPC** FCXX60MMFAN **MM#** 999D4A **UPC** 00735858426015 **EAN** 5032037168212 **MOQ** 1 **Product type** Spare FRU	Fan assembly with integrated dual rotor 60 mm fan.
WKP4740 	**Spare Fan Assembly with Integrated Dual Rotor 80 mm Fan** **iPC** FCXX80MMFAN **MM#** 999D4C **UPC** 00735858426022 **EAN** 5032037168229 **MOQ** 1 **Product type** Spare FRU	Fan assembly with integrated dual rotor 80 mm fan.

Image	Details	Description
	**Chassis Plumbing Connections Spare Kit** **iPC** FCXXLCMANFLD **MM#** 999D4F **UPC** 00735858426039 **EAN** 5032037168236 **MOQ** 1 **Product type** Spare FRU	Chassis plumbing connections spare kit. The plumbing connections include two Staubli* SCG 06 quick connect couplings. **Note**: The kit is pre-charged with liquid coolant.
	**Power Distribution Board Assembly** **iPC** FCXXPDBASSMBL **MM#** 999D4G **UPC** 00735858424745 **EAN** 5032037166973 **MOQ** 1 **Product type** Spare FRU	Power distribution board assembly spare kit. **Kit includes:** (1) – Power distribution board (2) – Power mezzanine boards – (No. 1) (2) – Management risers – (No. 2) **Power distribution board spare can be used only on the following chassis**: • Intel® Server Chassis FC2000 half-width Configuration Liquid-Cooled (2100W) • Intel® Server Chassis FC2000 half-width Configuration Air-Cooled (2100W) • Intel® Server Chassis FC2000 half-width Configuration Air-Cooled (1600W)
	**Internal Rail Spare Kit** **iPC** FCXX1USPPRT **MM#** 999D4H **UPC** 00735858426053 **EAN** 5032037168250 **MOQ** 1 **Product type** Spare FRU	Internal Rail spare kit for 1U compute modules. **Kit includes:** (4) – Rails.

<table>
<tr><th>Image</th><th>Details</th><th>Description</th></tr>
<tr>
<td>  </td>
<td>Fixed Rail Kit
<table>
<tr><td>iPC</td><td>FCXXRAILKIT</td></tr>
<tr><td>MM#</td><td>999D4J</td></tr>
<tr><td>UPC</td><td>00735858425971</td></tr>
<tr><td>EAN</td><td>5032037168175</td></tr>
<tr><td>MOQ</td><td>1</td></tr>
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Product type Spare FRU</td>
<td>Maximum supported weight: 330 lbs. (150kg)
Tool-less chassis attach</td>
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<tr>
<td>  </td>
<td>Spare North America Power Cable
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<tr><td>iPC</td><td>FPWRCABLENA</td></tr>
<tr><td>MM#</td><td>879287</td></tr>
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Product type Spare FRU</td>
<td>Spare North America power cord</td>
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Appendix A. Glossary

Term	Definition
Intel® AVX-512	Intel® Advanced Vector Extensions 512
BOM	Bill of Materials
CRPS	Common Redundant Power Supply
DDR4	Double-Data Rate 4
DIMM	Dual Inline Memory Module
DPC	DIMM per Channel
DR	Double Rank
EAN	International Article Number (Barcode)
ECC	Error Correcting Code
EMP	Ethernet Management Port
FRU	Field Replaceable Unit
iPC	Intel Product Code – used to identify an orderable Intel product
iPN	Intel Part Number – an internal part number issued to a component within a product bill of material (BOM). Individual Intel part numbers are not orderable unless it is included within an orderable Intel product code (iPC)
KVM	Keyboard, Video, Mouse
LRDIMM	Load-Reduced DIMM
MM#	Master Material order number - used to identify an orderable Intel product
MOQ	Minimum Order Quantity
NMI	Non-Maskable Interrupt
NVMe*	NVM Express* – based on Non-Volatile Memory Host Controller Interface Specification (NVMHCI)
Intel® OP HFI	Intel® Omni-Path Host Fabric Interface
OR	Oct Rank
PCIe*	PCI Express

Term	Definition
PMem	Persistent Memory
QR	Quad Rank
RDIMM	Registered DIMM
SMP	Server Management Processor
SSD	Solid State Drive
SR	Single Rank
Intel® UPI	Intel® Ultra Path Interconnect
UPC	Universal Product Code (Barcode)
VNNI	Vector Neural Network Instructions
Intel® VROC	Intel® Virtual RAID on CPU